AGENCY FOR INTERNATIONAL DEVELOPMENT
PPC/CDIE/DI REPORT PROCESSING FORM

ENTER INFORMATION ONLY IF NOT INCLUDED ON COVER OR TITLE PAGE OF DOCUMENT

1. Project/Subproject Number

9380705

2. Contract/Grant Number

FAO-0705-A-00-6034-00

3. Publication Date

December , 2003

4. Document Title/Translated Title

Partners of the Americas Farmer-to-Farmer Program Final Report – October 1, 1996 – September 30, 2003

5. Author (s)

1.
2.
3.

6. Contributing Organisation (s)

Partners of the Americas

7. Pagination

26 + Annexes

8. Report Number

9. Sponsoring A.I.D. Office

DCHA/PVC

10. Abstract (optional - 250 word limit)

Partners has implemented its *Farmer to Farmer* Program in Latin America and the Caribbean from October 1, 1996 to September 30, 2003. During these seven years, Partners volunteers completed 615 *Farmer-to-Farmer* assignments in eight target countries, two Caribbean islands as part of a pilot program, three West African countries through a mentoring partnership with OIC International, and seven non-target or secondary countries. The program has worked with over 840 host organizations, impacted over 35,000 direct beneficiaries and countless secondary and indirect beneficiaries, leveraged millions of dollars of in-kind resources for *Farmer-to-Farmer* projects, recruited volunteers from 36 U.S. states and reached tens of thousands of people in the U.S. through public outreach activities. This report provides an overview of the last seven years of the *Farmer to Farmer* program. It analyzes projects by sector, provides narrative examples to explain the numbers found in the impact indicator tables, summarizes Partners public outreach activities and reviews the Africa program. The report also provides a discussion on Partners unique structure and its fit to the *Farmer-to-Farmer* program.

11. Subject Keywords (optional)

1. Agricultural Development
2. Agricultural Cooperatives
3. Agricultural Marketing
4. International Volunteerism
5. Income Generation
6. Subsistence Farming

12. Supplementary Notes

13. Submitting Official

Eric Benschoter

14. Telephone Number

202-219-0476

15. Today's Date

5/10/05

…..……DO NOT write below this line……..……

16. DOCID

17. Document Disposition

DOCRD [ ] INV [ ] DUPLICATE [ ]

AID 590-7 (10/88)

TABLE OF CONTENTS

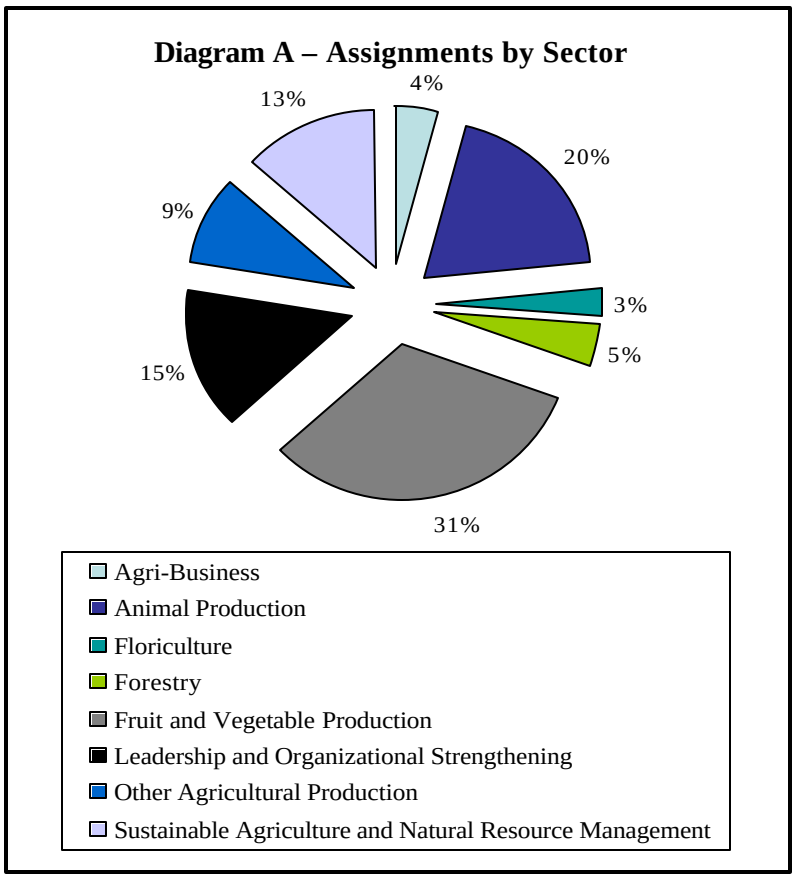
ANNEXES:

Partners has implemented its *Farmer to Farmer* Program in Latin America and the Caribbean from October 1, 1996 to September 30, 2003. During these seven years, Partners volunteers completed 615 *Farmer to Farmer* assignments in eight target countries, two Caribbean islands as part of a pilot program, three West African countries through a mentoring partnership with OIC International, and seven non-target or secondary countries. The program has worked with over 840 host organizations, impacted over 35,000 direct beneficiaries and countless secondary and indirect beneficiaries, leveraged millions of dollars of in-kind resources for *Farmer to Farmer* projects, recruited volunteers from 36 U.S. states and reached tens of thousands of people in the U.S. through public outreach activities. This report provides an overview of the last seven years of the *Farmer to Farmer* program. It analyzes projects by sector, provides narrative examples to explain the numbers found in the impact indicator tables, summarizes Partners public outreach activities and reviews the Africa program. The report also provides a discussion on Partners unique structure and its fit to the *Farmer to Farmer* program.

I. *Farmer to Farmer* Program Assessment

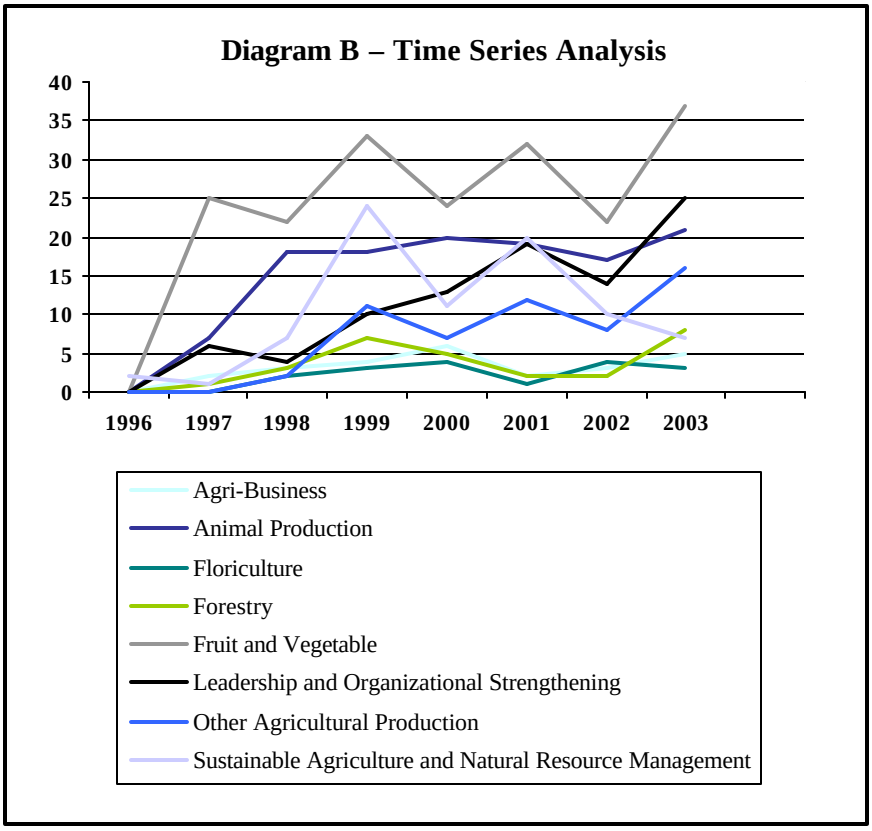
Attaining measured results, achieving project sustainability and increasing overall impact have been the primary goals of Partners' *Farmer to Farmer* program. The diverse background of volunteers – U.S. farmers, agriculturalists, extension staff and private agribusiness experts, among others – has helped Partners' *Farmer to Farmer* program achieve a broad impact throughout the hemisphere. The Partners program has provided technical assistance in a wide range of areas such as dairy production, soil and water conservation, integrated pest management, horticulture and honey production and marketing. It has embodied both the spirit and intent of the *Farmer to Farmer* legislative mandate to assist in increasing food production and distribution and improving the effectiveness of the farming and marketing operations of farmers. Under Partners coordination, the *Farmer to Farmer* program has achieved many things, including increasing producer incomes and productivity, improving soil and water management, and promoting the agro-processing of fruits and vegetables to diversify rural incomes. The following analysis explains these accomplishments by describing sector-specific outcomes and highlighting success stories from each sector.

Diagram A – Assignments by Sector



It should be noted that by prioritizing program monitoring and evaluation efforts during the life of program, Partners has collected accurate data that aids in measuring overall program impact. Most recently, the *Farmer to Farmer* program hosted an El Salvador-based project evaluation workshop in August 2003 that trained 32 volunteers and program coordinators on program evaluation methodologies. A program development and evaluation specialist from the University of Wisconsin Cooperative Extension, Mary Crave, played a key role in disseminating information to participants and providing training related to evaluation techniques, including use of the logic model to determine progress; tools to gather data, including group assessments and asset mapping; and Bennett's Hierarchy of Evidence, which measures client satisfaction. Following the workshop, U.S. volunteers traveled directly to their partner countries and completed, in conjunction with field officers and local *Farmer to Farmer* coordinators, country-level evaluations of Partners projects.

Relying on these evaluations, volunteer reports, and local-level impact data from field officers, this section of the report offers an analysis of eight sectors in which Partners has focused its efforts. Diagram A provides a visual depiction of these focus sectors. The percentages indicate how sector-specific assignments compare to the total number of assignments during the life of program. As the diagram explains, the majority of Partners' *Farmer to Farmer* assignments focused on fruit and vegetable production (31%) and animal production (20%). Diagram B below provides an additional perspective on how the number of *Farmer to Farmer* assignments have shifted during the life of program. The following discussion provides qualitative examples and additional quantitative data that clarify how Partners programs impacted these eight specific sectors.



Agri-Business Development

Farmer to Farmer assignments focused on agri-business development respond to the economic difficulties facing the Latin American region and strive to expand income-generating opportunities available to the rural poor. Since 1996, Partners has sent 25 *Farmer to Farmer* volunteers on assignments related to small business development and marketing. These assignments targeted small- and medium-sized businesses in an effort to promote broad-based participation in the economic growth of the region among the rural poor. The following

examples highlight how *Farmer to Farmer* assignments have impacted small-scale and agri-businesses in Latin America and the Caribbean.

In Guyana, Partners volunteers with marketing backgrounds started assisting the Friendship Farmers Land Coop Society (FFLCS) in 1997. With a membership of 43 individuals, 11 of which are women, the FFLCS cultivates cassava and sweet potatoes on its 175 collective acres. Marketing this produce was a core focus of the project. The Friendship Farmers normally marketed their cassava and potatoes from their farm gate to intermediary buyers, but the revenue from these sales often barely covered their production costs. Facing this challenge, *Farmer to Farmer* volunteers helped the farmers develop a direct marketing strategy. Through a donation from U.S. supporters, the cooperative was able to purchase a boat and outboard engines to transport produce directly from the farm to local markets, therefore eliminating the intermediary buyer and capturing higher profits. As a result, the cooperative members have seen a 20 to 25% increase in gross incomes.

In Honduras, coffee represents almost a quarter of the country's gross domestic product. The worldwide oversupply, however, has caused coffee prices to drop to some of their lowest levels in 30 years, which hurts coffee farmers whose livelihoods depend on the price that is paid for a 100-pound sack of *pergamino*, or minimally processed coffee beans. Partners launched a Honduran Coffee Project in 1999 that aims to improve the market position of Honduran coffee, specifically helping small-scale coffee growers access specialty niche markets. Building on the efforts of previous volunteers, *Farmer to Farmer* volunteer Meaghan Murphy has completed two marketing assignments since June 2002 to help coffee producers reach these goals. Working specifically with 15 members of the *Cuerpos de Conservación Honduras* (CCH), Murphy surveyed the potential for internal coffee marketing as a means of income generation and collected information about the potential for direct marketing of Honduran products to Vermont buyers. Murphy identified examples of marketing schemes within Honduras that have created a local market for specialty grade coffee and handicrafts. She also provided consultation services to CCH members about establishing a direct internet-based marketing initiative.

Farmer to Farmer volunteer Wilma Johnson started her Bolivia-based micro-credit activities over ten years ago when she traveled to the country's *altiplano* region in 1991 as a Ph.D. student. Seven *Farmer to Farmer* volunteers assignments later – her most recent being in August 2003 – the project has shown major impacts. One place were strong impact is evidenced is in the remote Aymara community of Carmen Lipe. In November 2002, Johnson secured funding for the village's women to purchase two industrial ovens. One year later, 27 women are now involved in the bakery project and together bake bread for sale in local markets. Johnson recruited two educated women from the community to provide the group with continued technical assistance related to improving business efficiency. These efforts include organizing work schedules, purchasing weekly baking supplies and acquiring supplies needed during the baking process. A strong demand for bread products exists in the local markets, and improved organization within the bakery has ensured a successful venture so far.

Animal Production

Technical assistance related to animal production has been a core *Farmer to Farmer* program sector since the current program's inception in 1996 and was also a prominent focus of the 1991-

1996 *Farmer to Farmer* program. Since 1996, 120 volunteer assignments related to this sector were completed in nine countries throughout Latin America and the Caribbean. Animal production efforts focused on a variety of sub-sectors, including small and large animal production; dairy production and livestock foraging; swine, rabbit and poultry production; and aquaculture and fisheries management. *Farmer to Farmer* volunteers worked primarily with limited resource families to increase their capacity to produce high-quality meat and animal by-products.

A core component of the animal production sector has been supporting dairy and livestock farms in Nicaragua, El Salvador, Bolivia and Ecuador. *Farmer to Farmer* volunteers through Partners completed 66 dairy sector assignments - 50% of the total assignments related to animal production. Volunteers have worked with dairy farmers, agricultural extension agents, Peace Corps volunteers and cattleman associations to increase dairy production and improve livestock management. A needs assessment by Partners chapter leaders recognized the importance of the dairy sector to farmers and the need to improve efficiency, production and marketing strategies to help farmers compete in competitive world markets. In Bolivia, for example, the *Farmer to Farmer* dairy project has improved dairy management, overall dairy production levels and the quality and marketing of dairy products. In Cochabamba, 50-80% of dairy cattle retained placenta after birthing their calves, which removed the animals from production for three to four months of the year. This break in production translated into losses of 15,000 to 17,000 liters of milk per year. *Farmer to Farmer* volunteers and the Bolivian Holstein Association (ACRHOBOL) worked together to train farmers on nutrition techniques that would solve this problem. They also identified an affordable feed supplement that helped to combat the disorder and made it available to association members. As a result of these training efforts, the farmers experienced a ten-fold drop in dairy cattle with retained placentas.

A project that has gained considerable momentum in the past two years is Partners' cysticerosis project, also in the region of Cochabamba, Bolivia. This project seeks to correct a public health problem – tapeworm infections – that affects much of Cochabamba's population. An intermediary in the parasite cycle, the pig is the main staple in the diet of rural inhabitants – when eaten, this contaminated pork with the larval stage of *Taenia solium* infects humans. As a result, *taenia solium cysticercosis* is a serious disease affecting over 20% of the rural population. *Farmer to Farmer* program volunteers have worked since 2000 to address this problem by focusing on all levels of the food chain – from producer to consumer – to correct this country-wide phenomenon. The first step of this project was to start a public health educational campaign for swine farmers and rural residents and, through public lectures and radio programs, over 125,000 Cochabamba residents have been educated about health risks associated with cysticercosis. *Farmer to Farmer* volunteers also met directly with 155 swine farmers and butchers to provide training on parasitic disease control and delivered technical training to 91 laboratory personnel from various hospitals on identification of parasite eggs and immune-based diagnostics. A core component of this project is to foster institutional collaboration among laboratories, municipal authorities, slaughterhouses/butchers, swine farmers and community members. To date, alliances have been formed with two local slaughterhouses, the IBSIISMED research laboratory, local health department officials, the Department of Cochabamba and five municipal-level veterinarians.

Floriculture

Farmer to Farmer technical assistance related to floriculture and ornamental plants helps small-scale agriculturalists diversify their produce and take advantage of local and national marketing opportunities. These efforts, based in El Salvador, have resulted in the completion of 17 *Farmer to Farmer* assignments since 1998, which have supported the production of cut flowers by small farmers. Specialty cash crops like cut flowers are attractive to small farmers because they allow farmers to continue producing their traditional main crops while earning supplemental resources through commodity sales. Cut flower production in particular helps provide rural women with alternative economic opportunities and increased income.

The *Farmer to Farmer* floriculture project was launched to support commodity diversification when volunteer Denyse Cummins first traveled to El Salvador and helped farmers select seed varieties, arranged for equipment donations, planned the timing and content of future technical visits, and met with project beneficiaries. August 2003 found her traveling to El Salvador on her eighth *Farmer to Farmer* assignment. The project has seen significant impact since 1998, as evidenced by the project's widespread replication throughout the country. Production levels have increased dramatically as a result of *Farmer to Farmer* assistance, which focused on flower disease and treatment strategies, securing plant material to diversify crops, and the provision of ornamental cuttings and seeds. One of the most important aspects of the project, however, is the institutional collaboration with local Peace Corps volunteers and CENTA (*Centro Nacional Tecnológica Agropecuaria*) agents, who keep Ms. Cummins updated with project progress. Ms. Cummins's relationship with Peace Corps volunteers has played an integral role in establishing rural-to-urban transport, so local producers can sell their produce at larger markets and capture higher prices. For example, two local Peace Corps volunteers have organized 18 cut flower growers into a cooperative and currently have them marketing on their own – they ride with a vegetable truck to San Salvador and sell their flowers to a store located in Plaza Masferrer, a busy street corner of the capital city.

Horticulturalist Denyse Cummins (left) has completed eight Farmer to Farmer assignments in El Salvador that focus on cut flower production.

In August 2003, Ms. Cummins organized a networking workshop for cut flower growers throughout the country. This event allowed growers to learn from each other and confront everyday challenges collectively. Forty-two cut flower growers, in addition to CENTA agents and Peace Corps volunteers, participated in the event. Ms. Cummins also used this opportunity to provide information about the potential benefits of the Central America Free Trade Agreement, or CAFTA, and is currently investigating international exporting opportunities.

Forestry

Farmer to Farmer assignments focused on forest management have sought to restore native ecosystems, preserve soil nutrients for future crops and decrease erosion, which threatens the sustainability of natural resources in Latin America and the Caribbean. To provide assistance related to these problems, the *Farmer to Farmer* volunteers have made forestry a target area by collaborating with non-governmental and international organizations to encourage reforestation and forest management efforts, along with teaching farming techniques that minimize environmental damage and diversifying on-farm production. During the life of program, Partners has completed 28 forestry management-related assignments in Latin America and the Caribbean.

Partners' *Farmer to Farmer* program in this sector has experienced the most impact in Haiti, where Partners has collaborated with the Washington, DC-based organization Trees for the Future, which implements people-to-people programs that revitalize lands through reforestation. The case of Haiti is particularly crucial, as it has only 1.5% of its original forests remaining. The practice of chopping trees for firewood and charcoal production has resulted in disastrous deforestation, causing soil erosion that washes into hydroelectric dams and irrigation systems. Agricultural output is also paltry due to the loss of fertile topsoil. Partners has sent several Trees for the Future staff members to provide assistance to this project. One of the most significant accomplishments of this project was the establishment of demonstration sites for field contours to control erosion on mountainous terrain in southern Haiti. Using combinations of Leucaena trees, vetiver, lemon grass and napier grass, *Farmer to Farmer* volunteer John Leary marked contour lines across three plots of land. These efforts also provided training for in-country coordinator Ferjuste Lafontant, who has established ten additional sites.

Volunteer Norm Bezona (right) teaches bamboo propagation techniques such as root division and branch cuttings in Haiti.

Complementing these efforts is the *Farmer to Farmer* bamboo project, which was established by volunteer Norm Bezona in 1999 to help local farmers combat erosion. Local Peace Corps volunteers, *Farmer to Farmer* coordinators in Haiti and a local nonprofit, the Organization for the Rehabilitation of the Environment (ORE), formed a triumvirate for initial project coordination. Since its inception, the project has completed two phases – introduction and propagation of new species and education of farmers as to the multiple benefits of bamboo; and second, expansion to include additional NGOs and interested agricultural groups in other regions, and distribution of the plants to individual farmers/collaborating groups for nursery and communal reforestation projects. On his first trip, Bezona delivered 200 plants representing 12 bamboo varieties donated by the Quindembo Nursery in Hawaii, and he worked by ORE's nursery facility to ensure that

100% of the plants survived. Since his inaugural visit, Bezona has traveled to Haiti three times to expand the reach of the project. Propagation techniques such as root division and branch cuttings have since generated over 40,000 plants from these original 200. Fifteen thousand bamboo plants have already been distributed throughout the country – 50% of these have been used for the rehabilitation of soils on riverbanks, ravines and protected natural areas. The other half were delivered to collaborating organizations and individual farmers. Two hundred plants have also been brought to the *Asociacion de Paysans de Vallue* (APV) in the south, where 15 staff members were trained on the propagation and use of bamboo. In the Camp Perrin area, ORE has led the effort to distribute plants to individual farmers. Of the 2,000 farmers who received plants, most farm one to two hectares of land and state they have planted 50% of the bamboo plants for construction, 25% for crafts and 25% for erosion control and reforestation.

Fruit and Vegetable Production

Because the majority of the poor live in rural areas, rural prosperity is essential to reducing the unequal income distribution and endemic poverty of Latin America and the Caribbean. During the life of program, 32% of Partners' *Farmer to Farmer* assignments have lent assistance to this population by increasing fruit and vegetable productivity and promoting product diversification. Working with targeted farming groups, organizations and cooperatives, *Farmer to Farmer* volunteers have improved levels of agricultural production and post-harvest handling of products. *Farmer to Farmer* assignments have also helped the rural poor to increase food availability, improve the quality of agricultural production and provide expanded technical assistance and other resources to participants, particularly women. The following examples indicate how Partners' technical assistance has benefited the rural poor by improving fruit and vegetable production efforts.

In Guatemala, the varied topography creates excellent micro-climatic zones highly suitable for deciduous fruit production such as apples, pears and peaches. These conditions, plus inexpensive labor, make Guatemalan deciduous fruit an important agricultural growth sector for Guatemala's highlands, one of the poorest regions of the country. These fruit growers face daunting challenges, including bacterial blight, competition from external markets and a need to improve fruit quality. Since 1997, *Farmer to Farmer* volunteers have worked with the *Proyecto de Desarrollo de Fruticultura y Agroindustria* (PROFRUTA, Fruit and Agro-industry Development Project) to train growers in pruning techniques and fertilization; improve tree nutrition, evaluate the presence of diseases and recommend appropriate remedial measures; assist with variety trials and offer fruit variety recommendations; and provide technical assistance in fruit harvesting and post-harvest handling. During the life of program, 18 volunteer assignments have resulted in tremendous accomplishments, including the introduction of new tree varieties and improvement in post-harvest

handling and storage techniques. Since *Farmer to Farmer* became involved in the sector, both employment and productivity have registered gains. The number of working days per hectare has increased by 57% from 80 to 140 days per year. Producers have also experienced a 40% increase in production as a result of improved pruning and fertilization techniques. *Farmer to Farmer* volunteers have also introduced 12 new apple and pear varieties, and funds raised by one volunteer helped purchase 835 trees and 550 blackberry and strawberry plants. *Farmer to Farmer* volunteers also helped leverage over $4000 in additional resources to finance two south-to-north trips by PROFRUTA farm advisors.

The Ecuador *Farmer to Farmer* potato project aims to increase production of potatoes and incomes of small potato farmers in the province of Tungurahua, Ecuador by improving potato yields, quality and marketing efforts. A dietary staple of central Ecuador, the potato is the most important cash crop for small- and medium-sized farms. However, small-scale producers have experienced shrinking profits in recent years due to rising production costs (including prices paid for seed and other inputs) and increased competition. During the life of project, seven volunteer assignments were designed to improve potato yields and correct ineffective pest management practices. To date, the project has produced positive impact data. New potato varieties introduced by *Farmer to Farmer* volunteers have brought higher prices and production levels. Program beneficiaries reported that approximately 20 potato producers – who were members of the *Centro Agrícola de Ambato* – experienced a 20% potato production increase, and 15 members experienced a 30% increase in revenues and profits. Moreover, donated seeds and labor for conducting field trials are estimated at $7,000. Also of note is that the *Centro Agrícola* recently acquired internet access, which has facilitated ongoing access to information and communication with the Kentucky *Farmer to Farmer* committee.

Leadership and Organizational Strengthening

Partners' *Farmer to Farmer* program has also focused on building the capacities and skill sets of cooperatives, associations and non-governmental organizations at the local level. These efforts include improving the capacity of producer organizations to provide new services to their members, advocating for policy changes or improved government services, and expanding business skills such as accounting and recordkeeping. Technical assistance has also improved governance structures, which implies increased transparency through adherence to by-laws and internal regulations. This assistance has also helped target host organizations to form networks with other organizations; mobilize needed resources; gain new planning and skills; and increase member participation in the activities of host country citizen organizations. Projects focused on leadership and organizational strengthening have also increased citizen participation and volunteerism in the development process by strengthening local institutions and reinforcing democratic experiences. During the life of program, Partners has completed 91 assignments related to these areas, including developing leadership skills, building organizational capacity and guiding strategic planning efforts.

In Honduras, nine volunteer assignments have focused on building the technical capacity of cooperatives and associations in Honduras. For example, *Farmer to Farmer* volunteers have established 12 sites in Honduras that house computer stations available to community and agriculture association members. During an August 2003 assignment, two volunteers from Vermont traveled to Honduras to evaluate these sites and provide training to 12 site leaders,

which included computer set-up, maintenance, software programs and internet skills. These training sessions developed leaders' skills so they could serve as community trainers themselves. The volunteers also carried out similar field trainings to 82 people with a particular focus on accessing agriculture and market-related information via the internet. These efforts built on the accomplishments of previous assignments. In the Punta Ocote (Yoro) region of Honduras, site leader Cristina Nuñez received computer training from two *Farmer to Farmer* volunteers in August, and she is now training 32 of the 300 community members in basic computer skills. Another example comes from the community of Siguatepeque, where Herme Artiles and his family opened their home for a community computer site. Within the first week of having a computer, they invested in a hand-made computer desk, speakers and a mousepad. Mr. Artlies's daughter currently studies computers and currently holds weekly computer trainings in their home for community members and agriculture association members.

In the Cochabamba region of Bolivia, *Farmer to Farmer* volunteers have been working to promote apiculture and modernize the developing industry, as apiculture is an underutilized trade in Bolivia. Honey production in Cochabamba was about 168 tons per year in 1999, well below the true production potential in the area. Volunteers have directly addressed the importance of institutional strengthening with associations such as the *Asociación Departamental de Apicultores* (ADAC) and the *Asociación de Productores Apícolas de Mizque* (ADAC). *Farmer to Farmer* volunteer Wyatt Mangum's presence led to the reform of ADAC, based in Cochabamba, which represents the largest association of honey producers. The association is now larger and more cohesive and currently consists of 35 active members. It was through *Farmer to Farmer* activities that ADAC and APAM began improving internal communication and encouraging local residents to start private apiaries. For example, ADAC president Airton Terrazes – who received apiculture training from several *Farmer to Farmer* volunteers – is an extension-oriented professor that now offers training related to hive management and honey harvesting techniques. As a result of his advice, one local family has increased their number of hives from 18 to 40 since the project started. Moreover, in May 2003, ADAC organized the *Feria de Miel*, or first annual Cochabamba Beekeeping Fair in which 50 vendors participated. After three hours, these vendors had sold all of their honey products, which bears witness to the high demand for honey in this region, marketing potential for honey and ADAC's expanding role within the community.

Poster from the "Feria Nacional de Miel" in Cochabamba

Other Agricultural Production

A significant portion of *Farmer to Farmer* assignments have focused on supporting the production of non-traditional and specialty crops. By encouraging diversification, *Farmer to Farmer* volunteers have supported the production of higher-value crops such as honey, specialty coffee, and peanuts, that supplement the income farmers earn from seasonal and traditional crops. Through the implementation of sustainable agricultural techniques, Partners' *Farmer to Farmer* program has achieved increases in non-traditional and specialty crop production and overall agricultural productivity for thousands of farmers throughout Latin America and the Caribbean. *Farmer to Farmer* assistance related to crop diversification has also allowed small-scale farmers and producers to access competitive markets and capture higher profits. *Farmer to Farmer* assistance has focused on four non-traditional sectors of agricultural production – apiculture, coffee, peanut and sugarcane production.

Apiculture in particular has been replicated throughout five of Partners' program priority countries – Bolivia, El Salvador, Guatemala, Haiti and Nicaragua. What began as one of the first *Farmer to Farmer* projects in Panama over 10 years ago has now expanded to Partners programs throughout Latin America and the Caribbean. Apiculture has great potential to stabilize and diversify the rural incomes of small farmers, which are vulnerable to crop losses and fluctuations in market demand for their more traditional products. In Nicaragua, for example, *Farmer to Farmer* volunteers Lee Heine and Wally Nass from Wisconsin visited a total of 140 beekeepers and three beekeeping associations with the goal of increasing the number of Nicaragua's managed hives from 300 existing hives to 900. In addition, the *Farmer to Farmer* volunteers organized a meeting among 22 country-wide Nicaraguan beekeepers – the first meeting of this magnitude in eight years. This initial informal gathering led to an official meeting the next month and the creation of the National Association of Apiculturalists of Nicaragua, which is currently developing a strategic plan for beekeeping in Nicaragua at the national level.

Another *Farmer to Farmer* project trains specialty coffee producers in Honduras in quality control. By identifying problems and establishing strategies address them, *Farmer to Farmer* volunteers have improved coffee farmers' access to international specialty markets and ultimately increased their incomes. This project is particularly viable because world-wide consumers are growing more interested in purchasing specialty and gourmet coffee, a trend that gives coffee producers an opportunity to capture higher profits (almost 100% increase per pound) in the international market. Most importantly, volunteers have established linkages between small-scale growers in Honduras and U.S.-based buyers in Vermont. In August 2002, Vermont-based Green Mountain Coffee Roasters purchased 16,000 pounds of fair trade, organic coffee from the *Central Cooperativa de Cafetaleras de Honduras*. The fair trade price was set at

Farmer to Farmer volunteer Frederick Schmidt examines coffee bean quality in Honduras.

$1.41 per pound, more than twice that of prices on the New York Coffee, Sugar and Cocoa Exchange, which hovered around $.65 per pound. *Farmer to Farmer* volunteer Rick Peyser's experience has been particularly valuable to the newly formed 2,300 member Specialty Coffee Association of Honduras (SCAH). Peyser has worked with coffee exporters to help them follow the strategies developed by the Specialty Coffee Industry of America. This cycle includes developing industry quality standards "from the tree to the cup," therefore focusing on all stages in the production cycle. Association members have already started implementing these strategies with the assistance of *Farmer to Farmer* volunteers from Green Mountain Coffee Roasters and the University of Vermont Center for Rural Studies.

Sustainable Agriculture and Natural Resource Management

Sustainable agriculture refers to the custom of integrating natural biological cycles and controls into agricultural practices, protecting and renewing soil fertility and the natural resources base, and optimizing the management and use of on-farm resources. Sustainable agriculture also seeks to minimize adverse impacts on health, safety, wildlife, water quality and the environment. Throughout the life of program, *Farmer to Farmer* volunteers have worked to increase knowledge about – and help farmers and ranchers adopt – practices that are economically viable and environmentally sound. Partners' technical assistance in this sector has been in a variety of technical areas including composting techniques, soil conservation, water use and irrigation practices, eco-tourism and park management.

Partners' composting project in El Salvador started in 1998 when Rolando Barillas, *Farmer to Farmer* coordinator and Director of Peace Corps/El Salvador Agro-forestry Programs, participated in a *Farmer to Farmer* training workshop in Louisiana. During this workshop, Mr. Barillas organized a working group charged with starting a comprehensive composting training program that benefits Peace Corps/El Salvador, *Fundación ABA* and the *Centro Nacional de Tegnología Agropecuaria y Forestal* (CENTA, the agricultural extension agency of El Salvador). This initiative, which promotes organic composting and waste management, has been a great success. To date, 31 organizations have been trained in methods to produce compost from organic waste, therefore creating a new source of employment and a new product for sale. Moreover, small-scale producers using organic compost have experienced a 10% increase in income from the sale of their vegetables, and production of vegetables grown using organic compost has increased by 45%. Due to these successes, discussions were held with the Minister of Agriculture about potential larger-scale projects, and the Minister has identified three priority areas – controlling poultry litter waste, the pulp generated from processing coffee beans and the fiber generated from processing sugar cane. As a result of the contacts made by *Farmer to Farmer* volunteers, a long-term project is being implemented to expand the solid waste recycling and composting program in El Salvador under the direction of the Minister of Environment and Agriculture in cooperation with Louisiana State University.

Sustainable agriculture and natural resource management has been a priority area for Honduras, where Partners started working with a grassroots network of rural agriculture education centers called *Centros de Enseñanza y Aprendizaje* (CEAs) in 1998. *Farmer to Farmer* volunteers, working in conjunction with local-level CEAs, have changed attitudes and practices related to environmental stewardship. For example, the local CEA in San Isidro has succeeded in helping 30% of the farmers they work with transition away from traditional slash and burn techniques.

These same farmers have reduced their dependence on pesticides and fertilizers, which they replaced with compost use. Such advances have improved production - corn production has increased from 15 to 20 *quintales/manzana* and bean production has increased from 6 to 8 *quintales/manzana*. These efforts are coupled with the dowsing component of the CEA training, which is an ancient technique used to locate water sources. *Farmer to Farmer* volunteers have trained over 40 dowsers in El Salvador, and several of these individuals now lead their own dowsing workshops.

Conclusion

The previous examples illustrate how Partners has achieved its goals of broad-based economic and agricultural growth and strengthened citizen participation and volunteerism in development. These examples also show how Partners' technical assistance was strategically focused on a number of specific projects with well-designed goals, that were carried out by strong host country field staff, organizations and U.S. volunteers over time. Targeting projects enabled *Farmer to Farmer* volunteers to provide specific technical assistance that built on the work carried out by previous volunteers. This ongoing stream of volunteers and support assured that each project reached its goals.

A key component of every Partners *Farmer to Farmer* project was the establishment of a network of institutions that provided project participants with on-going access to technical information and resources. Host country universities, research institutions and NGOs established informal and formal linkages with institutions in their partnerships that generated a continuous exchange of information and ideas, additional training opportunities and donations such as equipment, plant and genetic materials, books and journals. Several partnerships have already demonstrated an ability to secure private funding that ensures the continuation of sector-specific projects. At a minimum, repeat volunteers have already been communicating with Latin America- and Caribbean-based counterparts to offer continued, U.S.-based assistance. These relationships – sustained through the Partners network – have endured beyond the length of specific activities and help ensure on-going technical assistance to projects support by Partners.

II. Results-oriented Narrative from Impact Tables

The following section provides narrative examples that give greater meaning to the Impact Indicator Tables and data located in Annex 2. In this report, Partners is highlighting two specific indicator tables – Hosts with Improved Business Operations as a Result of Grantee/Volunteer Assistance (Table V) and Hosts with Improved Organizational Capacity as a Result of Grantee/Volunteer Assistance (Table VI). These tables have been selected in particular because they are both areas that Partners believes are important to the success and sustainability of *Farmer to Farmer* projects.

Table V – Hosts with Improved Business Operations as a Result of Grantee/Volunteer Assistance

A.	Number of hosts providing new or improved products and/or services.
B.	Number of hosts with production increases over pre-assignment levels.
C.	Number of hosts with increased business efficiency or resource conservation.
D.	Number of hosts receiving increased revenue/resources through increased sales receipts as a result of grantee/volunteer intervention.
E.	Number of hosts with increased profits.

It is expected that broad-based economic growth in Latin America and the Caribbean will lead to reduced levels of poverty, increased levels of political stability and food security, and higher standards of living throughout the region. In order to achieve that growth, there is an urgent need to provide new and improved services to the region's rural sector and the large numbers of poor who live there and derive their livelihoods from agriculture. The rural sector has been recognized as a sector that offers much potential for income and employment. However, as governments in the region look to market-based development and continue to privatize many traditionally state-sponsored services such as agricultural research and extension, the rural poor, who are rarely able to take advantage of privately funded services, have been overlooked. Levels of international assistance for agriculture have been decreasing, but the rural poor still have many pressing needs, among them access to technologies that will bring about increased total agricultural production levels and yields, improved infrastructure and access to markets and additional secure sources of income. A recognition of the relationship between rural development and national development has begun to emerge in the region, and Partners of the Americas' *Farmer to Farmer* Program has been well-situated to play an important role in rural and agricultural development there.

Farmer to Farmer volunteers have helped rural host organizations and beneficiaries in the rural sector to provide new or improved products and services and increase production, business efficiency, economic resource conservation, revenues, and ultimately, profits. In Table V, included in Annex 2, Indicator A shows 200 of 291 (69% impacted) hosts now provide new or improved products and services as a result of *Farmer to Farmer* volunteer assistance received or reported during FY03. Measured impact in this area is particularly meaningful because a clear link can often be drawn between new or improved products and services and production increases over pre-assignment levels, an area in which Partners has also been successful (Table V, indicator B). As indicator B illustrates, 92 of 215 (43% impacted) hosts are now experiencing production increases due to *Farmer to Farmer* assistance. The following examples illustrate the *Farmer to Farmer* program's success in introducing new products and services, enhancing agricultural practices and expanding production.

The *Farmer to Farmer* program initiated a cottage industry project with Alpaca Works in the Punata community of Bolivia at the special request of local Peace Corps collaborators. Alpaca Works is a non-governmental organization that offers socioeconomic opportunities to women knitters living in the Punata region – they produce hand-knit alpaca wool sweaters for retail sale

using a range of natural dyes. The organization is structured as a cooperative that actively encourages member participation. In 2000, the project started struggling because many of the commonly-produced sweater designs were not popular in the U.S. markets. As a result, the organization requested *Farmer to Farmer* assistance in producing more marketable products, and volunteer Susan Inglis traveled to Punata in July 2000 where she helped the women design eight new products. A recent project evaluation indicated that all eight products continue being produced and marketed to U.S. consumers. The group relies heavily on internet-based marketing efforts, as their sweater designs are advertised on their webpage. Furthermore, a local Peace Corps volunteer recently helped the group redesign and improve their webpage (www.geocities.com/alpacaworks/home.html) to provide added marketing assistance. Inglis has also provided extensive follow-up assistance and often sends new sweater designs and other references to support the project. Moreover, the group introduced a new product line when North Carolina Cooperative Extension Agent Debbie Stroud conducted training sessions for 23 women on marmalade and yogurt production and milk pasteurization in June 2002. The group currently makes these products for local use, and they are presently developing techniques to expand marketing potential.

Also in Bolivia, the *Farmer to Farmer* program initiated a swine production project in 1998 to identify production problems within the industry and work with small- and medium-scale producers to improve the quality of pork and expand local marketing opportunities. In 2003, *Farmer to Farmer* volunteer Leon Abbas provided technical assistance on this project by visiting four municipalities and four private farms; and by organizing two group workshops, a university lecture and a municipal-level seminar for 200 agriculture students, pork producers and local government officials. Through the recommendations of Abbas and previous volunteers, 50% of the private farms receiving *Farmer to Farmer* assistance improved the genetic make-up of their herd by introducing swine with healthier genetic traits. Moreover, 65% of these farms increased their feeding schedules from three to six times per day and began feeding products with higher fiber content (plantains, yucca and hearts of palm, for example) in order to provide more nutritionally-balanced feeding rations and, as a result, higher-quality pork products for retail sale.

Farmer to Farmer volunteer Jeffrey Simmons traveled to Haiti in September 2003 to continue assistance related to the peanut production project. A team of experts in this area have completed 11 assignments since 1999, and their suggestions have significantly impacted peanut production since this time. Although the sale of peanuts is profitable and the crops are easily sold, farmers were losing more than 50 percent of their crop before harvest and during storage due primarily to poor seed variety. To improve production, *Farmer to Farmer* volunteers introduced a new seed variety – Virugard – which increased peanut yields in Haiti by 50%. Upon his arrival in Haiti, however, Simmons noticed that much of the Virugard peanut seed previously donated had been mixed with less productive Haitian varieties and sold. Simmons provided training to approximately 60 producers (30% were female) to change this practice, explaining how they should save some of their post-harvest peanuts for use as seed in next year's planting. Simmons also provided 50 pounds of newly-donated peanut seed – enough to plant 10% of the total peanut acreage with which Partners works in Haiti – and is organizing a follow-up shipment of seed in time for the next planting cycle.

In El Salvador, Partners started offering rabbit production-related training with the assistance of volunteer James McNitt, who traveled to El Salvador in April 2003. Working with rabbit producers in three communities, McNitt provided hands-on cage construction training to 15 producers (50% were women). Because of the shortage of lumber and its resulting high cost, McNitt introduced cages constructed of welded mesh – costing about $9 each to build. The cost of building these cages is significantly less than those constructed of lumber, chicken wire and hardware cloth. Welded mesh cages are greatly improved compared to what producers used prior to McNitt's visit. Using these all-wire cages decreases the prevalence of disease within the rabbit colonies, since they are easier to clean. The welded mesh cages also last longer, as wooden cages are subject to chewing by the rabbits, and the new cages can be secured with padlocks to prevent theft.

Also in El Salvador, Partners fielded two volunteers – Carlos Smith and Robert Souvestre – to investigate the medicinal value of certain ethnobotanical plants in El Salvador. During their assignment, the volunteers organized a presentation to 37 farmers who formed a cooperative (Township Development Association) in the two local communities of Cara Sucio and Santa Rita. The volunteers jointly presented a demonstration on how to treat the symptoms of hemorrhagic conjunctivitis (a viral infection of the eye tissue), a condition from which 60% of the communities' population suffers. The volunteers fully explained the necessary treatment while demonstrating the preparation of an eyewash from locally-grown plants. The volunteers provided similar demonstrations to a total of 182 beneficiaries (104 women) in another nearby community. They also identified approximately 100 medicinal plants and collected digital images of each type, which they are currently using to develop a guide to locally available medicinal plants. These materials will be used by CENTA (Centro Nacional Tecnológica Agropequaria, or National Center for Agriculture, Livestock and Forestry Technology), the agricultural extension service of El Salvador; local Peace Corps volunteers; and SalvaNatura, a non-profit ecological foundation that manages protected areas and national parks in the country.

The *Farmer to Farmer* program at Partners continued collaborating with OIC International to field volunteers to western Africa in FY03. Volunteer Walter Kaiser traveled to Guinea in April 2003 to assist in the identification and control of plant diseases and pests affecting different food crops, particularly vegetables. Kaiser provided recommendations to the Profitable Agriculture and Village Extension (PAVE) project in the Mamou region of Guinea, which was established in 1996. The objectives of his three-week visit were to conduct a survey of the diseases and pests affecting food crops and recommend safe methods for controlling them. Kaiser provided eight control methods that PAVE farmers could adopt to control different diseases and pests, including growing food crops on raised beds and incorporating organic matter into the soil where vegetable seedlings are transplanted. The suggestion making the most impact was his recommendation to put into practice crop rotation methods, which reduce the incidence and damage of plant diseases and insect pests. Crop rotation is the practice of cultivating a different crop in the same area each year – for the best results, these crops are from different plant families. Each family has its own nutrient requirements and often does not share the same diseases or pests as others. Working with PAVE farmers, the *Farmer to Farmer* volunteer demonstrated how to implement these crop rotation methods. Numerous farmers had already adopted this pest-control strategy by the time the *Farmer to Farmer* volunteer left Guinea.

Table VI – Hosts with Improved Organizational Capacity as a Result of Grantee/Volunteer Assistance

A.	Number of organizations formed as a result of grantee/volunteer intervention.
B.	Number of hosts using new or improved planning techniques, program methodologies and/or management practices, including the use of a business plan or a strategic plan.
C.	Number of hosts with increased revenue/resources through new grants and/or increased fees.
D.	Number of hosts that have increased their membership as a result of grantee/volunteer interventions.

In order to ensure long-term, sustainable development in Latin America and Caribbean, Partners of the Americas pays special attention to improving the organizational capacity of host organizations in all countries and sectors in which we work. Training community leaders and strengthening local NGOs are two of four core competencies that guide all Partners efforts. The *Farmer to Farmer* program recognizes the importance of these competencies to achieving sustainable agricultural development and incorporates them in program efforts throughout the region. All *Farmer to Farmer* volunteers possess valuable technical skills, which they are able to successfully apply to production issues faced by small-scale producers in the region, but many also possess skills that can be transferred to host organizations, strengthening them and guaranteeing lasting program impact in the area of agricultural development. Table VI, included in Annex 2, illustrates the significant impact that the Partners *Farmer to Farmer* program has had in the area of hosts with improved organizational capacity as a result of grantee/volunteer assistance. Indicator B shows 114 of 180 hosts (86%) reported using new or improved planning techniques, program methodologies and/or management practices during FY03. In addition, Partners *Farmer to Farmer* volunteer assignments resulted in increased revenue/resources through the award of new grants and/or increased fees for 13 hosts during FY03 (Indicator C).

The examples below support Partners' strong impact in indicator B, the number of hosts using new or improved planning techniques, program methodologies and/or management practices, including the use of a business plan or a strategic plan.

In Ecuador, *Farmer to Farmer* volunteer Valdasue Steele initiated a project in the rural community of Sabana Grande to support small-scale meat and dairy producers. Steele was a major force in initiating new planning techniques for the projects and identifying collaborating institutions to lend sustainability to the project. In particular, she organized a planning workshop for students, local cattle experts and producers, who together identified project priorities, developed strategies for incorporating community members and scheduled field days. Steele also worked with these individuals to develop a strategic plan that includes post-assignment training activities. To date, these efforts have resulted in two field days that provided training to local producers in several technical areas (cattle vaccination, castration and parasite control; and similar training for horses).

In the Riobamba region of Ecuador, *Farmer to Farmer* volunteer Adam Kantrovich provided continued assistance on a long-term Partners project focused on developing the leadership skills of young local agriculturalists. He met with Líderes Agropecuarios del Ecuador (LAE, or

Agriculture Leaders of Ecuador) to teach pedagogy and instruction methods in order to improve overall management practices and increase the effectiveness of educational instruction and recordkeeping. The project's long-term goals include increasing the financial recordkeeping skills of local agricultural producers; expanding the use of effective curricula and instructional practices; and increasing student classroom involvement and knowledge. To carry out these objectives, Kantrovich provided 24 hours of classroom instruction on Methods of Instruction and Pedagogy and met with university administrators to organize planning seminars related to economics and financial recordkeeping.

In Guyana, research agronomist James Allen provided organizational capacity-building training to vegetable farmers in the Black Bush region. Previous to Allen's trip, these farmers independently addressed their production challenges, which included accessing financial resources, lobbying for government support and establishing solutions for disease/insect infestation problems. In talking with the farmers, Allen emphasized the importance of solving these issues collectively and explained the benefits of forming an organization. Allen helped unite these individuals into a single organization – the Lesbeholden Vegetable Farm Group – and establish group objectives and a strategic plan. Following Allen's advice, the members opened its membership to all area farmers, elected officers (chairman, vice-chairman, secretary, assistant secretary, treasurer and assistant treasurer) and put into place an executive committee comprised of three officers and two at-large group members. With the newly-established organization, the members are now positioned to jointly reach their mutually-established objectives, such as obtaining viable planting/seeding materials for producing crops; arranging for government- and NGO-provided technical assistance; and developing strategies for transporting produce to markets.

In Nicaragua, *Farmer to Farmer* volunteer Mary Crave worked with the Universidad Nacional Agraria (UNA, National Agrarian University) in Managua to improve the institution's curriculum development planning; expand the teaching capacity and planning of professors; and expand future student training opportunities. A primary focus of Crave's assignment was to provide training on curriculum evaluation tools and establish a procedure for evaluating course materials, objectives and content. To reach this goal, Crave introduced three tools to help evaluators and professors understand more about evaluation, including the Hierarchy of Evidence (distinguishes between true outcomes and learning); the Logic Model (uses learning theory to predict long-term outcomes of educational programs); and impact indicators (identifies specific evaluation measures at various times throughout a program). Crave trained 58 professors from four departments on these methods of evaluating curriculum development and participatory teaching methods. In addition to working with these individuals to plan their evaluation efforts, Crave also developed a list of formal recommendations for strengthening the teaching capacity and overall evaluation processes at UNA.

Also in Nicaragua, volunteer Mitch Mason analyzed the economic sustainability of agricultural businesses in Nadasmo, located in the Pio XII region of the country. He conducted four strategic planning sessions to train community leaders and vegetable producers in developing goals and constructing a strategic management plan. These planning sessions, which involved 15 producers, resulted in two significant outcomes related to planning techniques. First, Mason assisted in forming an independent group charged with marketing and selling products

(agriculture, horticulture and artisan) produced in Nandasmo. This new group also developed a self-sufficient revolving credit/funding system for individuals within the marketing/cooperative group. Second, they worked together to develop an educational plan that provides for the educational needs of the group and specifies which other local institutions/individuals can assist in educating the group's producers.

During her assignment in Haiti, *Farmer to Farmer* volunteer Donna Rosa addressed challenges facing the Association des Paysans de Vallue (APV) and several Cap Haitien-based cooperatives. Rosa worked specifically with APV members to improve program methodology and member services by soliciting feedback from the organization's members and, in conjunction with APV leaders, establishing solutions to address these concerns. The feedback gathered from member focus groups determined the rural development priority areas on which APV should focus – road construction, education, healthcare, reforestation and the establishment of a central market for selling local produce. APV leaders had been planning programs for projects in these priority areas, and Rosa assisted by working with leaders to develop project timelines and set completion deadlines. In working with Cap Haitien-based organizations, Rosa provided training in basic marketing principles for 11 organizations by explaining the steps used in developing a marketing plan, including outlining short- and long-term benefits; identifying target markets; outlining selling points; and selecting media formats for product promotion. At the end of the exercise, each organization had developed marketing plans for the products and services they currently offer.

In Minas Gerais, Brazil, *Farmer to Farmer* volunteer and resource development expert Meredith McBurney worked with the Iracambi Atlantic Rainforest Research and Conservation Center to establish a resource development plan that incorporates a strategy for identifying potential funding opportunities and acquiring outside resources. Situated in Brazil's Atlantic Rainforest, Iracambi is a natural resource management institution concerned with sustainable development, including agroforestry, land management and income-generating alternatives. McBurney's activities focused on developing a way to effectively communicate Iracambi's accomplishments and identifying potential funders to support the Center's mission. During her one-month assignment, McBurney produced grant proposal materials (summary paragraphs, accomplishments list, etc.) and submitted three proposal letters to potential funding sources. Moreover, she updated a list of funding sources, created a list of newly-identified funders and generated a directory of organizations that could provide in-kind support. In addition to her resource development planning efforts, McBurney also assisted in implementing board development changes that have established a stronger volunteer-governing body – a structure that will be expected by most U.S.-based funders.

The following examples highlight Partners ability to impact the number of hosts with increased revenue/resources through new grants and/or increased fees, indicator C in Table VI.

In the *altiplano* area of Bolivia, *Farmer to Farmer* volunteer Wilma Johnson has been working since March 1998 (seven *Farmer to Farmer* assignments between 1998 and 2003) with several Aymara communities to establish successful micro-enterprise programs. In the remote Quechua community of Vilacayma – located at an elevation of 14,000 feet and designated among the "poorest of the poor" by the Bolivian government – Johnson has started a micro-credit program

for the villages with funds obtained from a Utah-based businessman. Since April 2003, Johnson has received $10,000 from the donor to finance these micro-credit projects, which advance the quality of cattle and llamas owned by families and improve the quality of their crops. With these funds, 72 families were provided sheep to breed within their herds, and higher quality llamas are now being introduced. In early August, Johnson organized a group of 24 volunteers from Salt Lake City to travel to Vilacayma and construct a community building – funded by private donations – where residents can now hold meetings, receive trainings and women can produce intricate weavings. The construction was completed in November, and Johnson is now providing health trainings in the newly-completed building. With the support of Johnson and the private funding she has secured for these projects, Vilacayma is now a center for trainings for villagers who travel from surrounding *altiplano* communities.

Farmer to Farmer volunteer Arlen Albrecht traveled to Nicaragua in July to provide hands-on training in composting, constructing and planting at 12 project sites in the country. Albrecht secured a vegetable seed donation worth $300 to distribute within the communities where he worked. These seeds were the preliminary components of a 700 pound seed shipment – scheduled to arrive in Nicaragua in February 2004 – which was donated to the project by the Wisconsin Chapter of Partners of the Americas. This shipment complements two previous shipments of 700 pounds each that were sent to Nicaragua over the past two years. Moreover, Albrecht also received approximately $1000 in funding from the Chapter to purchase the materials and tools necessary to complete and expand a gravity-fed drip irrigation system that was put into place in 2002 in the community of Buenos Aires, about an hour south of Managua. When it was originally constructed, the system covered less than one acre and used an existing *pila*, or small watering tank. With these funds, it is now being expanded to cover over three acres and uses a 24' x 24' holding tank (4' high) with extra feeder and drip hoses.

As mentioned previously, the *Farmer to Farmer* program at Partners continued collaborating with OIC International to field volunteers to Africa in FY03. Long-time *Farmer to Farmer* volunteer and bamboo expert Norman Bezona provided assistance to a reforestation project in Togo and Ghana in August 2002 and May 2003. Between these two trips, Bezona invited OICI field officer Agbemebia Komivi to Hawaii where he studied the propagation, cultivation, harvesting and use of elite Asian bamboos for two months. During this time, he made contacts with several private nurseries and the Hawaii Chapter of the American Bamboo Society. From these organizations, he and Mr. Bezona garnered project support in the form of $8000 worth of bamboo plants. These 400 plants, representing 23 different species, were used in Mr. Bezona's workshop training sessions to demonstrate plant propagation techniques to nursery workers and employees of the Ghana Forestry Service.

III. U.S. Public Outreach Activities

Throughout the life of the Partners of the Americas *Farmer to Farmer* program, the program has made the most of the extensive network of U.S. Partners chapters to reach out to the American public easily and efficiently. The Partners network of professionals, institutions and communities has facilitated a great number of successful public outreach efforts, which have provided assistance in the recruitment of new volunteers while also increasing awareness and understanding of the importance of programs such as *Farmer to Farmer* and of U.S. international

development assistance in general. Even after the completion of the program, returned volunteers continue to promote awareness and understanding through additional public outreach activities.

From very early on in the program, *Farmer to Farmer* volunteers have performed many different types of public outreach, initially including informal discussions and presentations of their experiences and published interviews and articles upon return from assignment. As the program evolved, accessibility to the internet in Latin America and the Caribbean grew, which allowed many volunteers on assignment to be in more regular contact with family, friends, colleagues, program staff, and in some cases, even the media. By the end of the program, the Washington *Farmer to Farmer* team had developed a variety of resources to help with public outreach, including distributing to volunteers media outreach guidelines and templates for both pre- and post-assignment press releases for use with local media in both hard copy and digital formats. Copies are available in Annex 6.

In addition to the press release templates, the *Farmer to Farmer* team in Washington led many other public outreach efforts throughout the life of the program, including annual public outreach training workshops for U.S. volunteers, and publications such as press releases released by the Washington office throughout our U.S. network, and a newsletter published several times a year highlighting *Farmer to Farmer* volunteer and program achievements that were distributed to a hemisphere-wide audience. Copies of all Partners press releases are available online (www.partners.net), and a copy of the final program newsletter is included in Annex 7. The *Farmer to Farmer* team also contributed regularly to the Partners of the Americas newsletter that is sent out to approximately 4,000 people throughout the U.S. and over 1,200 people in Latin America and the Caribbean. A copy of the most recent Partners newsletter, which includes an article on a *Farmer to Farmer* project in Honduras, is available in Annex 8.

The *Farmer to Farmer* team has submitted specific examples of volunteer-led public outreach throughout the life of the program, and some of the most recent examples have been included in Annex 9. An article about volunteer Ed Arnold, a former Wisconsin state apiarist, and his apiculture assignment in Nicaragua appeared in the June 12 print edition of *The Oregon Observer*, also available online at www.oregonobserver.com. Steve Herbert, a water dowser from Vermont and recipient of the American Society of Dowsers' 2002 Dowser of the Year award, traveled to El Salvador to assist in the development of rural water sources in June. He contributed an article to *The Courier* of Littleton, New Hampshire, a weekly newspaper with a circulation of approximately 6,000 readers and a website on which articles are also published (www.courier-littletonnh.com). *Farmer to Farmer* volunteer Bob Souvestre contributed an article to *The Sunday Advocate*, published in Baton Rouge, Louisiana, detailing the assignment in which he and fellow volunteer Carlos Smith teamed up to work on an ethnobotanical plant project in El Salvador. As with the newspapers mentioned above, *The Sunday Advocate* also publishes an online version of the paper at www.2theadvocate.com. The last example we have included is taken from the October edition of *Phytopathology News*, the journal of The American Phytopathological Society, which featured a brief summary of Walter Kaiser's assignment in Ecuador where he provided assistance to an organization that works with small-scale female vegetable producers.

As reported previously, many Partners chapters publish and distribute their own newsletters both in the U.S. and abroad, and many chapters have websites which have electronic versions of the newsletters in addition to information about volunteers and *Farmer to Farmer* projects. Throughout the life of the program, *Farmer to Farmer* volunteers and projects were commonly featured in these newsletters. A recent copy of the North Carolina chapter newsletter, "The Cocha-lina Herald" is included in Annex 10. The most recent edition of the newsletter, along with additional information about *Farmer to Farmer* and other chapter activities, is available at the chapter website (www.ncboliviapartners.org). We have also included a copy of the June edition of the Louisiana Partners News as distributed by the Louisiana Partners chapter. This edition highlighted two *Farmer to Farmer* projects that were carried out in El Salvador recently.

And lastly, in addition to U.S. media coverage, volunteers have also generated much media coverage abroad. For example, while on assignment in Ecuador in September, *Farmer to Farmer* volunteers Linda Brewer and John Dodd were interviewed by newspaper and television reporters and were featured in local and national news coverage. In addition to their efforts at home, the positive exposure consistently generated by Partners *Farmer to Farmer* volunteers such as Brewer and Dodd provided a very valuable and personal face for the program and for USAID throughout Latin America and the Caribbean.

IV. Overview of Administrative Topics

Volunteer Numbers

Partners is pleased to report that the *Farmer to Farmer* Program exceeded the target number of volunteers for the Life of Program. The LOP targets were 606 volunteers and Partners (and OICI) fielded 616. This brings the total cost per volunteer down from $8,386 to $8,250, by far the lowest of all the *Farmer to Farmer* program implementers. This was accomplished in spite of several challenges to recruitment and fielding of volunteers, including the events of September 11th and the subsequent war on terrorism, political unrest and uncertainty in West Africa, Haiti and Guyana, and the wars in Afghanistan and Iraq, which have made many people less willing to travel internationally.

Volunteer vs. Paid Coordinators

From the beginning, it was clear that the needs of the *Farmer to Farmer* program fit directly into Partners institutional structure of partnerships and chapters. Partners therefore based its *Farmer to Farmer* program implementation methodology on this network, both for in-country program implementation and U.S. volunteer recruitment. Most programs are managed following Partners' traditional structure of Volunteer Coordinators and Project Leaders. A majority of these citizen experts are agronomists with many years of experience in their communities in agriculture related activities. Project leaders, who support Volunteer Coordinators, have the technical expertise in a specific project, i.e. dairy, beekeeping or food processing. These coordinators volunteer their time with Partners and the *Farmer to Farmer* program because of a personal or professional committee to helping their communities and their countries.

In addition to our volunteer-run chapters, Partners *Farmer to Farmer* program included full or part-time host country staff in Nicaragua, Honduras, Haiti and Guyana to test the effectiveness of

this model. These countries were selected to receive field staff for a variety of reasons including: USAID had initially limited the *Farmer to Farmer* program to these countries due to their low human and economic indices of development; and Haiti and Guyana were new *Farmer to Farmer* countries for Partners and field staff would facilitate start up. A few changes were made over the years. An additional part time field staff person was added in Bolivia to meet the communication and reporting needs of the Bolivia/USAID Mission and coordinate *Farmer to Farmer* activities in the three geographically diverse Bolivian partnerships. The Honduras chapter's Agricultural committee increased its capacity to manage the program and that paid staff position was terminated early in 2002. The Honduras program is currently well supported by a number of Honduras-Vermont Partner volunteer members.

In evaluating the performance of countries with field staff versus those with volunteer coordinators, there is no conclusive evidence for either model. The El Salvador *Farmer to Farmer* program is an example of a program managed by volunteer coordinators that has strong projects, has identified good host organizations and successfully fields volunteers with quality *Farmer to Farmer* assignments. El Salvador volunteers have an on-going relationship with their Louisiana counterparts, and manage the process well with some support from U.S. based staff (especially in strategic planning and monitoring/evaluation). On the other hand, the paid *Farmer to Farmer* Field Coordinator in Haiti is essential to the success of that program and it would be difficult to imagine the program continuing without his support. The difference in the two countries could well be the increased difficulties faced by Haiti in communications and language differences (French Creole is spoken by limited U.S. *Farmer to Farmer* staff members) make it necessary for the model to include paid field staff in country.

As to be expected, much of the success also depends on the individuals involved. The first full-time paid coordinator in Nicaragua did the minimum required to keep the program running, whereas the second coordinator, paid on a part-time basis only, has made Nicaragua one of Partners' most active *Farmer to Farmer* countries. The Quayaquil, Ecuador program has thrived under the direction of the new *Farmer to Farmer* committee chair, who is a volunteer but is very committed to Partners and to seeing the program have an impact in his community. Therefore, it is difficult to draw any conclusive recommendations regarding paid vs. volunteer programs other than to say that each country and circumstance should be considered unique and decisions should be made based on the individuals and factors involved.

Program Modifications and Innovations

Over the last seven years, Partners has continually fine-tuned its systems to improve *Farmer to Farmer* Program implementation. The following are examples of modifications and innovations over the Life of Program.

Joint Project Planning Workshops: Training workshops have always been a part of the Partners *Farmer to Farmer* Program. Early on, it was determined that joint North-South workshops were the best option. Partners regularly brought together a critical mass of volunteers and representatives of participating organizations from the US, Latin America and the Caribbean to discuss needs amenable to change, formulate or strengthen projects, refine impact indicators and agree upon a schedule for implementation. Regional workshops included training in detailed project planning, effective volunteer management, evaluation, and public outreach.

Geographic diversification: Several *Farmer to Farmer* country programs developed the capacity of reaching more isolated communities and organizations after their projects had been established. The program effectively reached groups that do not traditionally receive support. Examples include the expansion of the *Farmer to Farmer* Ecuador program to Riobamba, the inclusion of Tarija an Oruro to the Bolivia program and the expansion of the Guyana program to the Berbice Region.

Newsletter and Public Outreach: In addition to contributing regularly to the Partners of the Americas newsletter that is distributed throughout the hemisphere, the *Farmer to Farmer* Program developed and published is own newsletter geared towards keeping in touch with our volunteers, keeping them interested and involved in the program and sharing useful program information. The program published seven newsletters between 2001 and 2003, including one translated into Spanish and sent to collaborating organizations in Latin America.

Web as Tool for Program Support, Recruitment and Outreach: The *Farmer to Farmer* program has increasingly used the Partners of the Americas website (www.partners.net) for program implementation, recruitment and public outreach. Just as the widespread use of email throughout the Americas has revolutionized day-to-day program-related communications, the development of a well-designed and logical website has made *Farmer to Farmer* program management more efficient and more accessible to project stakeholders. Features added to the web site over the years include instructions and forms necessary to design a *Farmer to Farmer* project in multiple languages, a searchable library of volunteer trip reports, photo albums of *Farmer to Farmer* projects, downloadable case studies of select project, and links to other agricultural web pages in multiple languages for relevant and up-to date technical information.

Development of a customized database: A customized database that links all aspects of Partners' *Farmer to Farmer* activities is critical to maximize efficiency and accurately evaluate program impact. Partners of the Americas invested in a new database in 2002 and the database design was developed with specific input from the *Farmer to Farmer* program management team so as to incorporate important features such as: the enhanced ability to track impact indicators in order to improve program evaluation capabilities; the ability to attach technical documents like trip reports to searchable fields, thus making it easier to index and research past volunteer assignments; and the facilitation of volunteer management and recruitment through great improvements in the capacity to generate reports and conduct fine-tuned searches based on criteria such as past volunteer assignments and areas of technical expertise.

Updated filing system: After several years of managing the program, the *Farmer to Farmer* volunteer tracking and filing system in the central office was reorganized and streamlined. By changing from a chronologically-based system to a project-based system, it is now easier to locate project-specific information to provide to follow-up travelers and to share among our different partnerships in order to spread knowledge about successful projects from one country to another. The system was particularly useful in writing detailed case studies highlighting successful projects so that the information can be shared formally with USAID missions, project stakeholders, and other interested parties.

V. Africa Program Implementation

During two-year West Africa mentoring agreement with OIC International, *Farmer to Farmer* volunteers completed 16 assignments in Ghana, Guinea and Togo. Volunteers worked in the areas of marketing, business planning, vegetable processing and conservation for export, reforestation techniques, beekeeping and higher yields for small-scale cashew nut producers. They have trained trainers, implemented business plans, and assisted farmers in the provision of agricultural equipment and education materials, benefiting farmers, extension agents, and farm cooperatives.

Select Highlights and Impact

Guinea
Since 1997, OICI Guinea has been running a food security program (PAVE) in seven sub-Prefectures of Mamou (Konkoure, Tolo, Poredaka, Soyah, Boulliwel, Dounet and the "Commune Urbaine") and the Garafiri resettlement zone. Dr. Walter Kaiser, a plant pathologist, was the first *Farmer to Farmer* volunteer to visit Guinea and his assignment was to survey plant diseases and pest situation of food crops that are being grown by beneficiary farmers. Dr. Kaiser worked with farmers groups, PAVE field agents, Guinea government field agents, two research centers and PAVE workers in disease identification and control. Field agents who had limited knowledge of plant diseases now have a wider understanding of plant diseases and how to control them and can replicate the training outside the program areas. In addition, the volunteer's report on plant diseases has been translated into Arabic and French, making it available to other farmers and organizations in rural areas. In addition, a workshop held in Mamou brought together the different heads of agriculture and forestry departments of the region, delegates from research centers, and OICI staff and the workshop document is now used as a tool for identifying plant diseases and their onset. This documentation allows OICI to share the information with all its food security partners in the region to improve their reporting procedures as well.

After the visits to the project intervention zone, Dr. Kaiser found seven more diseases that were not recorded by the local research centers. In addition, further research on plant diseases carried out by the Bareng Research Center and the *Farmer to Farmer* program in Mamou not only allowed the Center to gain more experience, but also to save money and time it would otherwise have spent to complete their research. There are plans to replicate this program in other areas of Guinea using the services of already-trained field agents.

Togo
Norman Bezona traveled to Togo to work on community reforestation projects and community nursery development. The purpose and primary objective of the original project was to contribute to the reduction of the rate of deforestation by the reforestation of 50 hectares in 15 villages. Specific objectives including training 36 technicians from OIC Togo in nursery development techniques as well as on reforestation techniques; training of 30 nursery farmers in 10 villages; and monitoring the nursery farmers as they apply the techniques learned. After two *Farmer to Farmer* visits, the impact was even greater than expected.

Norm Bezona traveled to Togo in September 2002 and May 2003. After his second trip, 63 village nursery farmers had been trained by Bezona, along with the OIC Togo Village Monitors (technical trainers). These 63 farmers have in turn trained an additional 39 people, including 12 women in nursery and reforestation techniques. In addition to the teak and other trees used in the nurseries and reforestation, Bezona also identified the potential of bamboo development in the OIC intervention area. An OIC-Togo technician travelled to Hawaii through outside funding to be trained in bamboo production techniques. This technician returned to Togo and trained 38 additional technicians in bamboo.

Accomplishments

Partners and OIC International spent a great deal of time on training, material preparation and project identification to build a solid foundation for the new *Farmer to Farmer* program in West Africa. Specific accomplishments include:

- Adaptation of Partners *Farmer to Farmer* Manuals, Project Design and Volunteer Assignment forms, travel guidelines, field office reporting guidelines and other relevant information to OICI's Africa program;
- Translation of these materials into French for use in Togo and Cote d'Ivoire. These same translations were useful in Partners *Farmer to Farmer* Program in Haiti;
- Development and printing of OICI brochure to promote the *Farmer to Farmer* program and assist with volunteer recruitment;
- Initial training workshop held in Ghana with members of OICI, OIC Ghana, OIC Togo and OIC Cote d'Ivoire covering topics including: Nuts and Bolts of the Partners *Farmer to Farmer* Program; Project Identification, Design and Implementation; Volunteer Recruitment and Orientation; Monitoring and Evaluation: Impact Indicators, Obtaining and Measuring Results; and Reporting;
- In Ghana, Togo, and Cote d'Ivoire, Partners staff and local OIC staff members visited potential projects and sites that would receive *Farmer to Farmer* technical assistance. Project design issues were addressed, as well as development of good volunteer assignments and logistics of hosting *Farmer to Farmer* volunteers; and
- Submission of Project Design and Volunteer Assignment forms from each local OIC to the regional coordinator in Ghana. Once reviewed in Ghana, Partners and OICI met to review potential projects and give feedback to local OIC chapters.
- Newsletter articles, press releases and web promotion of the new program to the Partners network, Universities and extension services across the country and the general public to assist with recruitment and knowledge of the program,
- Final Evaluation workshop in Togo with members of OICI, OIC Ghana, OIC Togo and OIC Guinea.

During the last quarter of FY03, Partners and OIC International focused on evaluating the two-year program. As mentioned above, Partners staff members Anabella Bruch and Peggy Carlson traveled to Togo and Ghana in September 2003 to hold an evaluation workshop for OICI field staff, volunteers and beneficiaries. Workshop sessions focused on selecting impact indicators, obtaining results and measuring program impact. These sessions were complemented by individual, country-specific presentations about participant experiences in implementing *Farmer to Farmer* projects in Guinea, Ghana and Togo, and evaluating project successes.

Challenges

Political Instability
Due to the political instability in Cote d'Ivoire, OICI was advised to put a hold on sending volunteers there. A great deal of time, training and resources had been invested in program start-up in Cote d'Ivoire yet they were not able to host any volunteers due to the internal conflict. To attempt to make up for some of the lost opportunities, OICI requested the inclusion of two additional countries, Guinea and Chad, to be included as part of expanded geographic area. The program in Guinea was able to field two volunteers

Recruitment
Building a US-based recruitment network has been one of the main challenges for OICI. During the two-year program, Partners was very involved in recruitment and advertising program opportunities through our network. In December of 2002, OICI significantly stepped up it's own recruiting efforts with a strategy focused on Historically Black Colleges and Universities (HBCUs) and visited and maintained dialogue with several HBCUs to encourage minority farmers and professors to volunteer in Africa. However, recruitment of volunteers was still a challenge. Timing was an issue as many projects needed volunteers during the exact months that US farmers were unavailable (March until September) due to their own farming activities. The war in Iraq and other international scared has been another challenge in recruiting volunteers, especially those who have never been to Africa. Efforts have been made to alleviate the concerns of potential volunteers to travel but these events slowed recruitment efforts. By the end of the two-year program, however, OICI had begun to develop it's own network of contacts in the U.S. for recruiting volunteers, revamped their organization's web site to include more detailed information about the *Farmer to Farmer* (FarmServe Africa) program, and developed linkages with the Minority Peace Corps Volunteer Association, which should help in recruitment.

Staff Issues
One of the main challenges in the implementation of the West Africa program was staff turnover at OIC International. The two staff members who had been involved in the initial proposal, program planning, training and initial implementation both left their positions at the OICI Headquarters. One remained with the organization but relocated to Ghana where she has been a valuable asset to the in-country program implementation. However, the time and resources involved in retraining headquarters staff in the *Farmer to Farmer* program were significant and had an impact on the level of program reporting, volunteer recruitment and impact.

VI. Financial Status

Please see attached.

Volunteer Tracking

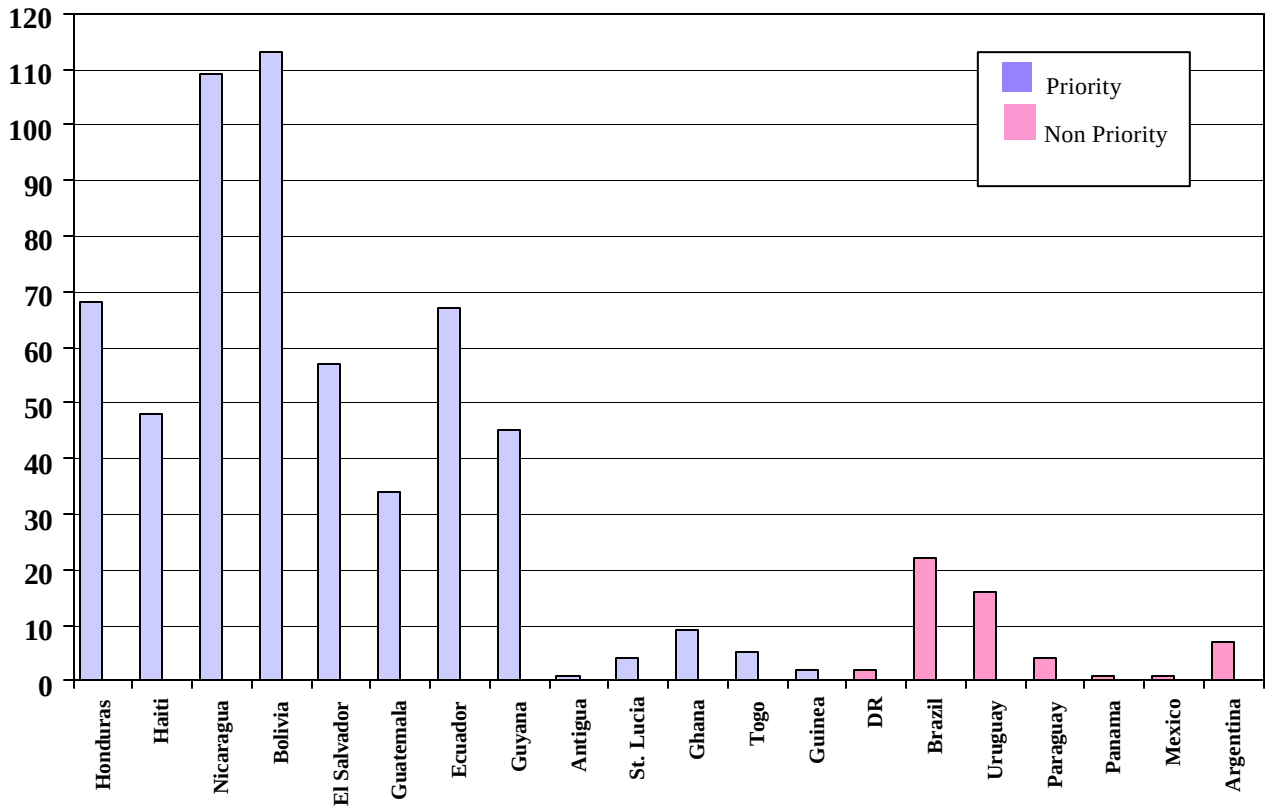
Farmer to Farmer **Volunteers Fielded**

Total number of volunteers to date: **615**

Gender summary of volunteer numbers: women 141 (23%) of 615 total volunteers

Volunteers by country of assignment:

- Antigua 1
- Argentina 7
- Bolivia 113
- Brazil 22
- Dom. Rep. 2
- Ecuador 67
- El Salvador 57
- Ghana 9
- Guatemala 34
- Guinea 2
- Guyana 45
- Haiti 48
- Honduras 68
- Mexico 1
- Nicaragua 109
- Panama 1
- Paraguay 4
- St. Lucia 4
- Togo 5
- Uruguay 16



Farmer to Farmer Volunteer Travel from April 1, 2003 through September 30, 2003

Project Site and Dates of Travel

Name	Country	Start Date	End Date
Don Nolan	Nicaragua	1-Apr-03	16-Apr-03
Arnold Dood	Argentina	4-Apr-03	18-Apr-03
Robert Albrecht	Nicaragua	20-Apr-03	4-May-03
Walter Kaiser	Guinea	23-Apr-03	15-May-03
Jim McNitt	El Salvador	23-Apr-03	7-May-03
Dan Mayer	Haiti	23-Apr-03	7-May-03
John Santas	Brazil	1-May-03	15-May-03
Edward Arnold	Nicaragua	3-May-03	18-May-03
Norm Bezona	Togo	4-May-03	11-May-03
Parad Meier	Honduras	10-May-03	23-May-03
Katherine Dyer	Honduras	10-May-03	23-May-03
Lee Albrecht	Nicaragua	11-May-03	25-May-03
Suzy Valentine	Nicaragua	11-May-03	24-May-03
Buck Richards	Nicaragua	11-May-03	25-May-03
Norm Bezona	Ghana	12-May-03	21-May-03
Valdasue Steele	Ecuador	12-May-03	26-May-03
Adam Kantrovich	Ecuador	12-May-03	26-May-03
James Garner	Guyana	14-May-03	27-May-03
Don Hopkins	Bolivia	15-May-03	31-May-03
Andre Mathews	Ghana	16-May-03	6-Jun-03
Ron Morrow	Bolivia	23-May-03	6-Jun-03
James Noble	Nicaragua	24-May-03	7-Jun-03
Richard Dudgeon	Nicaragua	24-May-03	7-Jun-03
Maria Teresa Correa	Bolivia	30-May-03	21-Jun-03

Name	Country	Start Date	End Date
Yao Afanchao	Ghana	1-Jun-03	16-Jun-03
Walter Kaiser	Ecuador	1-Jun-03	14-Jun-03
Conrad Berube	Ghana	1-Jun-03	16-Jul-03
Jim McNitt	Haiti	2-Jun-03	16-Jun-03
Pete Purinton	Honduras	5-Jun-03	15-Jun-03
Daniel Baker	Honduras	5-Jun-03	15-Jun-03
Gerald Skiles	Togo	7-Jun-03	27-Jun-03
Michael Levy	Bolivia	7-Jun-03	21-Jun-03
Len Harzman	Brazil	7-Jun-03	22-Jun-03
Yao Afanchao	Togo	17-Jun-03	2-Jul-03
Brandon Davis	Ecuador	21-Jun-03	4-Jul-03
Chad Bishop	Ecuador	21-Jun-03	4-Jul-03
John Preissing	Nicaragua	27-Jun-03	10-Jul-03
Yvonne Horton	Nicaragua	28-Jun-03	12-Jul-03
Linda Weber	Nicaragua	2-Jul-03	16-Jul-03
Judy Miller	Nicaragua	2-Jul-03	16-Jul-03
Robert Burke	Nicaragua	6-Jul-03	20-Jul-03
James Resick	Nicaragua	6-Jul-03	20-Jul-03
Arlen Albrecht	Nicaragua	6-Jul-03	20-Jul-03
Lee McGee	El Salvador	14-Jul-03	27-Jul-03
Joe Green	Ghana	14-Jul-03	2-Aug-03
Eddie Bryant	Ghana	15-Jul-03	2-Aug-03
Pius Nyadzor	Guinea	28-Jul-03	8-Aug-03
Robert Kuzelka	Brazil	2-Aug-03	15-Aug-03
Denyse Cummins	El Salvador	5-Aug-03	17-Aug-03
John Goodwin	Bolivia	5-Aug-03	17-Aug-03
Mary Crave	Nicaragua	12-Aug-03	29-Aug-03

Name	Country	Start Date	End Date
James Garner	Guyana	13-Aug-03	25-Aug-03
Wilma Johnson	Bolivia	13-Aug-03	28-Aug-03
Steve Gibson	Bolivia	13-Aug-03	27-Aug-03
Terry Hutchens	Ecuador	13-Aug-03	25-Aug-03
Meaghan Murphy	Honduras	13-Aug-03	24-Aug-03
Thomas DeSisto	Honduras	13-Aug-03	24-Aug-03
Matias Chiota	Honduras	13-Aug-03	24-Aug-03
Iris Cole-Crosby	Guyana	13-Aug-03	26-Aug-03
Steve Wilson	Guatemala	13-Aug-03	24-Aug-03
Bobby Boozer	Guatemala	13-Aug-03	24-Aug-03
Daniel Baker	Honduras	13-Aug-03	24-Aug-03
Zen Miller	Ecuador	15-Aug-03	1-Sep-03
Robert Souvestre	El Salvador	18-Aug-03	30-Aug-03
Carlos Smith	El Salvador	19-Aug-03	30-Aug-03
John Leary	Haiti	20-Aug-03	12-Sep-03
Kathy Hedberg	Ecuador	20-Aug-03	3-Sep-03
Don Dombek	Bolivia	24-Aug-03	5-Sep-03
Fran B. Free	Bolivia	24-Aug-03	5-Sep-03
Deborah Hill	Ecuador	25-Aug-03	2-Sep-03
Linda Brewer	Ecuador	27-Aug-03	10-Sep-03
James Allen	Guyana	28-Aug-03	13-Sep-03
Ken Tilt	Guatemala	1-Sep-03	10-Sep-03
Hayes Jackson	Guatemala	1-Sep-03	10-Sep-03
Robert Bates	St. Lucia	2-Sep-03	14-Sep-03
Mary Ellen Bell	Nicaragua	4-Sep-03	19-Sep-03
Donna Rosa	Haiti	9-Sep-03	20-Sep-03
Nathan Sandwick	Nicaragua	13-Sep-03	4-Oct-03

Name	Country	Start Date	End Date
John Dodd	Ecuador	14-Sep-03	28-Sep-03
Marie Alyse Cadez	Ecuador	16-Sep-03	29-Sep-03
Delbert Harris	Ecuador	19-Sep-03	30-Sep-03
Jeffrey Simmons	Haiti	20-Sep-03	2-Oct-03
Paul McLeod	Bolivia	21-Sep-03	2-Oct-03
James Correll	Bolivia	21-Sep-03	2-Oct-03
Brian R. Murphy	Brazil	24-Sep-03	8-Oct-03
Meredith McBurney	Brazil	27-Sep-03	1-Nov-03
Mitch Mason	Nicaragua	28-Sep-03	12-Oct-03
Rose Skora	Nicaragua	28-Sep-03	12-Oct-03

Impact Indicator Tables

Farmer to Farmer Program Inputs and Outputs

Table I.1-Annual Volunteer Inputs		
	FY03	**LOP Total**
A. Total LOP number of volunteers	70	416
Male	56	316
Female	14	100
B. Annual number of international FTF volunteer trips	136	615
C. Annual average cost per volunteer day*	$450	$555
D. Annual estimated value of FTF volunteers' professional time	$399,024	$1,804,410

* Total cost per volunteer fielded is $8,263.40

Table I.2-Cumulative Number of Volunteers and Assignments by US State of Origin

		Cumulative Number of Volunteers (see Table I.1, Row A)						**Cumulative Number of Volunteer Assignments**					
		Previous Total		**This Period**		**New Total**		**Previous Total**		**This Period**		**New Total**	
Regions	**States**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Northeast													
	Connecticut												
	Delaware	1				1	0	1				1	0
	Maine					0	0					0	0
	Maryland	3		2		5	0	4		3		7	0
	Massachusetts	1				1	0	1				1	0
	New Hampshire					0	0					0	0
	New Jersey	8	3		1	8	4	10	3		1	10	4
	New York	4	2			4	2	4	2			4	2
	Pennsylvania	1				1	0	1	1			1	1
	Rhode Island					0	0					0	0
	Vermont	28	10	2	1	30	11	45	10	5	3	50	13
	Washington, DC					0	0			1		1	0
	Subtotal	**46**	**15**	**4**	**2**	**50**	**17**	**66**	**16**	**9**	**4**	**75**	**20**

		Number of Volunteers						Number of Volunteer Assignments					
		Previous Total		This Period		New Total		Previous Total		This Period		New Total	
Regions	**States**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Southeast													
	Alabama	14	3			14	3	19	3	4		23	3
	Arkansas	17	2	4	1	21	3	27	3	8	1	35	4
	Florida	14	1	1		15	1	17	2	1	1	18	3
	Georgia	6	5			6	5	7	5			7	5
	Kentucky	18	6	4		22	6	23	10	4	1	27	11
	Louisiana	15	5	3		18	5	30	10	6	1	36	11
	Mississippi	10	1	1		11	1	25	1	1	1	26	2
	North Carolina	34	12	2		36	12	46	12	5	1	51	13
	South Carolina					0	0					0	0
	Tennessee					0	0					0	0
	Virginia	2	2	2		4	2	2	3	2		4	3
	West Virginia					0	0					0	0
	Subtotal	**130**	**37**	**17**	**1**	**147**	**38**	**196**	**49**	**31**	**6**	**227**	**55**
Midwest													
	Illinois	1				1	0	1		2		3	0
	Indiana					0	0					0	0
	Iowa					0	0					0	0
	Kansas	1	3			1	3	1	3			1	3
	Missouri		2			0	2	1				1	0
	Nebraska	1	1	1		2	1	1	1	1		2	1
	Ohio	1				1	0	1				1	0
	Subtotal	**4**	**6**	**1**	**0**	**5**	**6**	**5**	**4**	**3**	**0**	**8**	**4**
Upper Midwest													
	Michigan					0	0					0	0
	Minnesota	15	2			15	2	16	2			16	2
	North Dakota					0	0					0	0
	South Dakota					0	0					0	0
	Wisconsin	42	19	7	1	49	20	67	24	12	7	79	31
	Subtotal	**57**	**21**	**7**	**1**	**64**	**22**	**83**	**26**	**12**	**7**	**95**	**33**
Rocky Mountain													
	Colorado	3	3		1	3	4	4	2		1	4	3
	Idaho	10	1	2	3	12	4	19	4	4	3	23	7
	Montana	6	1	2		8	1	4	2	2		6	2
	Utah	6	2			6	2	9	6		1	9	7
	Wyoming	1				1	0		1			0	1
	Subtotal	**26**	**7**	**4**	**4**	**30**	**11**	**36**	**15**	**6**	**5**	**42**	**20**

		Number of Volunteers						Number of Volunteer Assignments					
		Previous Total		This Period		New Total		Previous Total		This Period		New Total	
Regions	**States**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
West Coast													
	Alaska					0	0					0	0
	Hawaii	1				1	0	6		2		8	0
	California	10	3			10	3	10	3			10	3
	Oregon	1	1	1		2	1	1	3	1	1	2	4
	Washington	1	1			1	1	1	1			1	1
	Subtotal	**13**	**5**	**1**	**0**	**14**	**5**	**18**	**7**	**3**	**1**	**21**	**8**
Southwest													
	Arizona					0	0					0	0
	Nevada					0	0					0	0
	New Mexico	1				1	0	1				1	0
	Oklahoma	2				2	0	2				2	0
	Texas	1				1	0	1				1	0
	Subtotal	**4**	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**4**	**0**
other													
	Canada	1		1		2	0	1		1		2	0
	Mexico		1			0	1		1			0	1
	expat					0	0					0	0
	Subtotal	**1**	**1**	**1**	**0**	**2**	**1**	**1**	**1**	**1**	**0**	**2**	**1**
	TOTAL	**281**	**92**	**35**	**8**	**316**	**100**	**409**	**118**	**64**	**23**	**474**	**141**

Table II-Annual Volunteer Outputs		
	FY03	**LOP Total**
A. Annual estimated value of resources leveraged by the grantee/volunteers in the U.S.	$75,950	$770,500
B. Annual estimated value of resources leveraged by the host in host country	$188,324	$2,030,319
C. Annual estimated value of resources mobilized by Host	$12,500	$214,125
D. Annual total number of direct beneficiaries of FTF volunteer assistance	10,377	35,154
Male	8,210	26,302
Female	2,167	8,852
E. Annual number of Hosts who have participated in U.S. based training and exchange programs through all sources	18	66

Table III - FTF Host Assignments Cumulative Summary		
FTF Hosts	**Previous Total**	**New Total**
A. Hosts with first-time FTF assignment(s).	379	466
B. Hosts with multiple FTF assignments.	226	374
Total number of Hosts	**605**	**840**

Table IV - Annual and Cumulative Total Number of FTF Hosts		
Host Categories	**FY03**	**Cumulative**
A. Private Enterprises	239	304
B. Organizations	298	532
C. NGOs	34	53
D. Rural Financial Institutions	1	1
Total Number of Hosts	**572**	**890**

FTF Program Impacts with Hosts

Table V - Hosts with Improved Business Operations as a Result of Grantee/Volunteer Assistance				
	FY 03			**LOP**
FTF Hosts	**Hosts Assessed**	**Hosts Impacted**	**% of Hosts Impacted**	**Hosts Impacted**
A. Number of hosts providing new or improved products and/or services.	293	201	69%	232
B. Number of hosts with production increases over pre-assignment levels.	215	93	43%	131
C. Number of hosts with increased business efficiency or resource conservation.	119	78	66%	146
D. Number of hosts receiving increased revenue/resources through increased sales receipts as a result of grantee/volunteer intervention.	58	23	40%	33
E. Number of hosts with increased profits.	65	26	40%	50

Table VI - FTF Hosts with Improved Organizational Capacity as a Result of Grantee/Volunteer Assistance				
	FY 03			LOP
FTF Hosts	**Hosts Assessed**	**Hosts Impacted**	**% of Hosts Impacted**	**Hosts Impacted**
A. Number of organizations formed as a result of grantee/volunteer intervention.	8	8	100%	14
B. Number of hosts using new or improved planning techniques, program methodologies and/or management practices, including the use of a business plan or a strategic plan.	182	116	64%	155
C. Number of hosts with increased revenue/resources through new grants and/or increased fees.	34	14	41%	31
D. Number of hosts that have increased their membership as a result of grantee/volunteer interventions.	3	10	333%	26

Table VII - FTF Hosts with Improved Services to Membership/Employees as a Result of Grantee/Volunteer Assistance				
	FY 03			LOP
FTF Hosts	**Hosts Assessed**	**Hosts Impacted**	**% of Hosts Impacted**	**Hosts Impacted**
A. Number of hosts that have successfully intervened on behalf of members with government or business.	19	8	42%	17
B. Number of hosts with new training courses or new subject matter for courses to use with membership or associates.	204	217	106%	348
C. Number of hosts with improved training materials and skills.	220	268	122%	512

Table VIII - FTF Host with Improved Financial Services to the Agricultural Sector as a Result of Grantee/Volunteer Assistance				
	FY 03			LOP Totals
FTF Hosts	**Hosts Assessed**	**Hosts Impacted**	**% of Hosts Impacted**	**Hosts Impacted**
A. Number of Hosts with an increased number of agricultural related loans	2	2	100%	3
B. Number of Hosts with loan delinquency rate < 10%	2	2	100%	2
C. Number of Hosts that provide improved banking services to the agricultural sector	2	2	100%	2
1. Number of Hosts with an increase in average loan size	1	1	100%	1
2. Number of Hosts with an increase in Producer Portfolio Value (ag production and processing loans)	2	2	100%	2
3. Number of Hosts with an increased number of Branches/Groups	1	1	100%	1
D. Number of Hosts with an increase in Enterprise Portfolio Value (microfinance loans)	3	2	67%	2

Table IX - FTF Hosts with Improved Use and/or Protection of the Environment as a Result of Grantee/Volunteer Assistance				
	FY 03			LOP
FTF Hosts	**Hosts Assessed**	**Hosts Impacted**	**% of Hosts Impacted**	**Hosts Impacted**
A. Number of Hosts adopting one or more practices to improve waste or pollution management.	54	30	56%	45
B. Number of Hosts adopting one or more practices to improve natural resources management (soil, water, forest, grazing lands, national park land, etc.).	105	61	58%	153

Farmer to Farmer Program Impacts

Table X - Increased Awareness in the U.S. Agricultural Sector Concerning International Agricultural Development			
Indicators	**Previous Total**	**FY03**	**LOP Total**
A. Number of FTF volunteers who have performed public outreach activities.	266	59	325
B. Number of media events by implementors and FTF volunteers.	233	30	263
C. Number of group presentations by implementors and FTF volunteers.	1,100	154	1256

Partners of the Americas
1424 K Street, NW · Suite 700 · Washington, DC 20005
202-628-3300 · Fax: 202-628-3306 · www.partners.net

Topic:	**Honduras Ecological Artisanal Sugar Production Project**
Collaborating Organizations:	Small-Scale Artisanal Sugar Producers, the Cooperativa Agropecuaria de Productores de Caña Limitada (CAPROCATAL), the Municipality of Taulabe, Honduras, the University of Vermont Center for Rural Studies, the *Farmer to Farmer* Program, Partners of the Americas
Target Audience:	Small-Scale Sugar Producers in Honduras
Description:	The project aims to improve artisanal sugar processing methods, reducing contaminants using techniques similar to those employed by Vermont maple sugar makers thereby eliminating the need to use tires as fuel and improving the quality of the brown sugar in an environmentally sustainable way. The assistance provided by *Farmer to Farmer* volunteers focuses on improving the design and efficiency of the flue pans and evaporators leading to higher quality production and increased productivity, while also improving artisanal sugar marketing knowledge and skills and introducing the production of basic value-added sugar products.

Background

In Honduras, one of the poorest countries in the Western Hemisphere, economic growth depends heavily on the economy of the country's primary trading partner, the United States, in addition to commodity prices in international markets, particularly coffee, bananas, and to some extent sugar. Although, according to recent estimates, agriculture only accounts for 14% of the Gross Domestic Product of Honduras, it employs approximately 34% of the labor force.

The majority of Hondurans involved in agriculture work on small-scale farms producing for their own consumption and local markets. In the municipality of Taulabe, in the central Honduran department of Comayagua, small-scale sugarcane producers often process the sugar they grow into a hard brown sugar known as *rapadura* for sale locally.

In 2000, René Santos, current Agriculture Committee president of the Honduras Partners of the Americas chapter and owner of a certified organic farm and *Centro de Enseñanza y Aprendizaje* (Teaching and Learning Center) "El Socorro," brought up his concerns with the Agriculture Committee regarding the burning of tires as a supplemental fuel source by small-scale sugar processors in the municipality of Taulabe. With a population of approximately 23,000 people, sugar cane production and processing represented a major

source of economic activity for Taulabe, as well as a major source of environmental degradation and health problems.

Shortly thereafter, Vermont *Farmer to Farmer* volunteer Dan Baker, a lecturer in the Department of Community Development and Applied Economics at the University of Vermont and member of the Vermont Partners chapter, visited Taulabe to investigate options for dealing with the declining availability of more conventional fuel sources and declining environmental conditions. During his first trip, Baker visited many small processing facilities and observed firsthand the burning of used rubber tires for fuel. Traditionally, processors had burned firewood as their primary source of fuel; however, due to a variety of factors, firewood was becoming increasingly scarce and much more expensive than the widely available used tires. As this shift occurred, processors began to use tires as their primary source of fuel, consuming on average, one truckload of tires per week. During the processing season, thick black smoke was visible throughout Taulabe, a scenic rural community plagued by air pollution and the resultant health issues, well-documented by the local Department of Health.

As Baker toured the different processing sites, he noticed many similarities between small-scale sugar cane processing in Honduras and Vermont maple sugar processing. Baker himself taps approximately 200 maple trees each year, and he saw right away that the potential existed to transfer and adapt simple technology used in maple syrup production to improve efficiency while at the same time decreasing the adverse environmental impact of sugar processing and improving health and economic conditions in the community. Working closely with the CAPROCATAL sugar cane producer cooperative of Taulabe and local volunteers, the project has achieved impressive results.

Farmer to Farmer *Technical Assistance and Impact*

Four different volunteers have carried out eight assignments related to the small scale sugar cane processing in Taulabe. While the main focus of the work has been related to the adoption and adaptation of appropriate processing technology, work has also been done in areas including quality control in processing and production of *rapadura*, marketing and value-added product development, and alternative and complementary small-scale agricultural production.

Highlights

- Two local mayors, including the mayor of Taulabe, agreed to propose legislation banning tire burning once the *bagazo*-based system was shown to be economically viable for small producers.
- Three of the region's largest sugar cane processors adopted the new design within two months of the successful production of high quality *rapadura* using only *bagazo* as a fuel source.
- The World Bank selected a proposal based on the project as one of 183 finalists from among 2,700 applications in the 2003 Development Marketplace.

Appropriate Processing Technology

In both processes, a liquid, either maple sap tapped from maple trees in Vermont or *guarapo*, the juice pressed from harvested sugar cane in Honduras, is boiled down using wood or other readily available fuels to produce the final product, maple syrup or

sugar in Vermont or *rapadura*, a hard-packed brown sugar in Honduras. Over the years, Vermont maple syrup processing has developed into a sophisticated industry while small-scale sugar processing in Honduras continues to employ very basic technology due to small producers' limited access to education and extension services, credit, and other inputs conducive to innovation and growth.

The centerpiece of any sugar processing operation is the evaporator, a series of pans in which the sap or *guarapo* is boiled down to the correct consistency to produce syrup or sugar. In the U.S., the first pan, known as the sap or flue pan, has narrow, deep channels, or flues, that increase the surface area of the pan improving heat transfer and increasing the efficiency of the heat source being used. The sap flows through the sap pan to the syrup pan, a flat-bottomed pan where the syrup is brought closer to the proper consistency for production of the final product. The series of pans sits above the heat source, most often burning wood, though as noted above, over time wood has become increasingly scarce in Honduras, and therefore, increasingly expensive relative to other fuel sources such as used rubber tires.

Among Baker's initial observations of the technology being used by small-scale sugar processors in Taulabe, he noted that flat bottomed pans were being used throughout the boiling process leading to inefficient use of the heat source. He also wondered about the potential of using *bagazo*, the residual fiber that remains once the juice has pressed out of the sugar cane, to supplement or even replace wood and rubber tires as a fuel source. Based on Baker's observations and recommendations, the Vermont *Farmer to Farmer* committee decided to ship a flue pan to Honduras to aid in transferring and adapting the more modern Vermont technology to the Honduran reality.

During his second assignment, Baker and his Honduran counterpart Goldon Aguilar, current president of CAPROCATAL and a small cane producer and processor himself, began the difficult task of adapting the Vermont design for use in Honduran sugar processing. The most obvious difference between the design of the Vermont and the Honduran pans were the flues of the Vermont pan. Since there were other differences in the Vermont and Honduran set-ups, the Vermont design could not simply be swapped in Baker and his Honduran counterparts devoted much time and effort to the adaptation and re-design of the technology for optimum performance in the Honduran system, a process that continues today, though the current improvements are most often very minor.

With the increased efficiency of the flue pans established, Baker and Aguilar worked toward increasing the efficiency of the fire box so that they could take advantage of the

large quantities of *bagazo* available to be used as a fuel source. Many small Honduran producers had experimented on their own using *bagazo* as a fuel source, but they reported that the fires did not reach high enough temperatures to boil the pressed juice in a timely and cost-effective manner. Small-scale producers in other countries and commercial sugar cane processing operations throughout the world regularly use *bagazo* as a fuel source. Baker surmised that the small-scale producers in Taulabe had experienced negative results due to the inherent inefficiency of the flat-bottomed boiling pans and the drafty fire boxes found in traditional evaporator set-ups. Project volunteers have experimented with different designs and modifications to the Honduran fire box and have reached the point where they can produce commercially viable sugar burning only *bagazo*.

Quality Control in Processing and Production

As was to be expected, the addition of an adapted flue pan along with a modified and improved fire box design caused immediate impact in the Honduran system, decreasing the need for used rubber tires as a fuel source as well as decreasing boil time significantly. Unfortunately, as was also to be expected, new challenges became apparent. The increased efficiency of the fire boxes along with the increased surface area of the flue pans allowed the cane juice to reach its boiling point much more quickly and with increased intensity. Apparently, the hotter and faster boil prevented contaminants from settling out of the cooking cane juice as they had previously during the slower-boiling early stages of production, and this resulted in a darker, lower quality finished product, which according to Baker, received a lower price in the market. Project volunteers studied the entire sugar production process and identified a number of potential sources of contamination such as lubricants used in the hydraulic sugar cane presses and dirt and grime from the cut sugar cane coming from the fields.

Again, Baker and other U.S. volunteers drew on their own knowledge and experience in Vermont maple syrup processing in assisting Honduran processors with the challenges that arose from the increased evaporator efficiency. Working with their Honduran counterparts, *Farmer to Farmer* volunteers identified run-off from the sugar cane press lubrication system as the primary source of contamination. Despite the fact that neither presses nor lubricants are involved in the production of maple syrup in the U.S., maple syrup producers do need to protect the sap they collect from the maple trees from contamination until it is collected and brought to the sugarhouse. Traditionally sap is collected by tapping trees and hanging a bucket below each tap. In order to keep rain, snow, and other foreign materials from contaminating the sap, U.S. producers cover the buckets with some sort of hood. Much in the same way, a cover was fashioned to protect the cane juice from dripping press lubricants resulting in decreased contamination and a much improved final product.

Between final flue pan adjustments and improved quality of the uncooked cane juice, *Farmer to Farmer* volunteers were able to produce high quality *rapadura* without the need for burning rubber tires, and within two months of the demonstration of the redesigned evaporator, three of the region's largest sugar cane processors had adopted the new design. Since then, project leaders have estimated that adoption rates for the new design have averaged approximately one producer per month.

Marketing and Value-Added Products

As production challenges have been met, Baker and other *Farmer to Farmer* volunteers have begun to shift their focus toward improving the business aspects of small scale sugar production in Taulabe. In order to focus his initial efforts in this area, Baker helped found the Ecological Sugar Producers Group within CAPROCATAL. The group consists of producers who have already adopted the new technology along with those who have expressed interest in adopting the technology. Efforts are underway to develop a business model for the group including defined marketing plans and strategies, thorough analyses of costs of implementation and production for new evaporators, exploration of possibilities for external funding through grants and access to credit, and the development of value-added products such as brown sugar and sugar syrup.

Specific marketing strategies for *rapadura* and other sugar products produced by small-scale sugar cane processors using ecological processing methods make up an integral part of the business model being developed for members of the Ecological Sugar Producers Group, but as in much of the developing world, very little market information is available to small-scale producers who often have very limited knowledge about marketing in general. In Honduras, poorly developed infrastructure has contributed to a lack of communication between small-scale producers and the market throughout the country, and that, when combined with very limited opportunities for any kind of training in small business administration, has consistently left small-scale sugar producers in Taulabe unaware of changes in the market for *rapadura* and other sugar products and completely unprepared to react to any of those changes.

Again, based on experience in the highly competitive maple syrup industry of Vermont and the United States in general, *Farmer to Farmer* volunteers were able to assist Honduran producers explore potential markets, both in Honduras and abroad, and think about products that could successfully compete in those markets while being produced on a small scale. Producers were aware of pricing differences based on color and quality of *rapadura*, and as discussed above, project participants realized the importance of assuring a high level of final product quality to the acceptance of the new technology. As

the quality of the *rapadura* produced using the new evaporators reached and exceeded the quality of the *rapadura* produced using traditional evaporators, both producers and the market took notice. U.S. volunteers also demonstrated the production of value-added products such as granulated sugar, cane syrup, and hard candy, and they visited outdoor markets and grocery stores with local project participants whenever possible to see what other small-scale sugar producers were successfully marketing. Volunteers encouraged members of the Ecological Sugar Producers Group to try to identify niche markets that would be more likely to offer premium prices for ecologically-produced sugar and sustainable farming practices overall.

Alternative Agriculture

U.S. volunteers with experience in organic vegetable production also traveled to Honduras to offer small-scale producers alternatives and complements to the production of commodities such as sugar and coffee. Products such as these often represent the primary source of income for many small producers, but at the same time, these products are facing constantly increasing competition in local, regional, and export markets. *Farmer to Farmer* volunteers Eric Rozendaal and Richard Wiswall, accomplished organic farmers in Vermont, led workshops and offered specific advice in the small-scale production and marketing of organic vegetables. They led producers in the construction of basic greenhouses using local materials that would require limited amounts of space and give producers some amount of control over the environment. At a minimum, Rozendaal and Wiswall provided small producers with the tools to improve the diet of their families while cutting weekly food expenses, but the potential exists for small producers to eventually diversify and shift the emphasis of income generation from commodities facing increasing competition and decreasing prices such as sugar and coffee to include the production of organic vegetables for growing markets with lower levels of competition and higher prices.

Future Steps

As the *Farmer to Farmer* program comes to a close, project volunteers are actively seeking funding from other organizations in Honduras and elsewhere so that the project does not lose momentum. The mayor of Taulabe is a strong supporter of the project and has worked closely with the project leaders to develop contacts and explore sources of funding within Honduras, most notably within the Ministry of Agriculture. Here in the United States, efforts are also underway to seek funding externally. With the support of the Department of Community Development and Applied Economics at the University of Vermont, a proposal based on the project was selected as one of 183 finalists from 2,700 applications in the World Bank 2003 Development Marketplace program.

Baker leads a course at the University of Vermont that travels to Honduras each year and plans to continue to support the project as much as possible when he is in-country as well from Vermont providing direction in the search for funding and providing additional technical information. Local project participants continue to experiment with design modifications to improve overall efficiency of the evaporator based on what they have learned and they are currently working toward developing a viable granulated brown

sugar to sell in a national chain of Honduran grocery stores that specialize in the products of small-scale producers.

The advances brought about throughout the life of this project have resulted in significant progress for small-scale sugar producers in the municipality of Taulabe and the community in general. Thanks to the dedication and hard work of *Farmer to Farmer* volunteers from both Vermont and Honduras, the municipality of Taulabe has experienced a decreased demand for increasingly scarce firewood and a dramatic reduction in the amount of rubber tires being burned for small-scale sugar processing. More efficient and cost-effective sugar production methods and improving business practices have made the small producers more competitive in local markets, and as producers and volunteers continue to investigate, develop, and exploit new and existing markets for ecologically-produced sugar, the positive impacts of this project experienced in Taulabe will continue to grow. There has been interest from small-scale producers from other regions of Honduras and even as far away as Ecuador. Thanks to the support of USAID, the volunteers involved in this project have truly improved the quality of life for small scale sugar producers and all residents of the municipality of Taulabe.

Partners of the Americas

1424 K Street, NW · Suite 700 · Washington, DC 20005
202-628-3300 · Fax: 202-628-3306 · www.partners.net

Topic:	**Nicaragua Dairy Project**
Collaborating Organizations:	Small- and Medium-Scale Dairy Producers, Comisión Nacional Ganadera de Nicaragua (CONAGAN), Universidad Nacional Agraria (UNA), Proyecto de Desarrollo Ganadero Rural (PRODEGA), University of Wisconsin Cooperative Extension, Wisconsin and Nicaragua Chapters of Partners of the Americas, *Farmer to Farmer* Program
Target Audience:	Small- and Medium-Scale Dairy Producers in Nicaragua
Description:	The project aims to improve the quality of milk produced by small- and medium-scale farmers in Nicaragua. The assistance provided by *Farmer to Farmer* volunteers focuses on livestock health, hygienic milk production, marketing of dairy products and organizational strengthening.

Background

Nicaragua has the largest land area and cattle herd in Central America and is well-positioned to use these resources to expand its dairy farming industry. Although dairy production remains low – only two to three liters per day from each cow on average – recent advances have led to steadily increasing production levels. Improvements in genetics, veterinary practices, nutrition, and pasture quality have resulted in overall milk production of 62.8 million gallons in 2001, a production increase of roughly 3.2% per year between 1990 and 2001. The production of dairy by-products such as cheese, yogurt, butter and cream, has also steadily increased.

Despite these positive dairy trends, Nicaraguan milk producers – roughly 55,000 poor, small-scale farmers – continually confront production challenges. The industry faces problems associated with pronounced seasonality of production, high domestic farm milk prices by international standards, low consumer incomes, poor sanitation, shortages of cold storage facilities, high-cost transportation of dairy products and underdeveloped management skills. Partners of the Americas' Nicaragua Dairy Project was initiated in April 1999 to help small-scale milk producers in Nicaragua overcome these production challenges.

Partners of the Americas
1424 K Street, NW · Suite 700 · Washington, DC 20005
202-628-3300 · Fax: 202-628-3306 · www.partners.net

The Nicaragua Dairy Project provides technical assistance to dairy producers and addresses on-farm quality issues such as herd health, sanitation, farm management, breeding, feeding, post-milking care of milk and cost of production. Another project goal is to strengthen the organizational capacity of the *Comisión Nacional Ganadera de Nicaragua* (CONAGAN, National Livestock Commission of Nicaragua). This component of the project aims to fortify the managerial and business capacity of CONAGAN's member organizations and support the development of sustainable livestock activities. CONAGAN works with small- and medium-sized cattle farmers by providing technical assistance, information and training to local cattleman association members.

Farmer to Farmer Technical Assistance

The technical assistance provided by *Farmer to Farmer* volunteers in Nicaragua has focused on three specific objectives – improving milk quality, increasing livestock health and strengthening organizational capacity.

> ***Improving Milk Quality.*** **Volunteer Robert Albrecht, a retired farm and feed supply business owner, initiated efforts to incorporate milk quality assurance as a component of the Nicaragua Dairy Project. Since November 1999, Mr. Albrecht has completed seven trips, the most recent in April 2003. His and other *Farmer to Farmer* assignments have focused on developing hygienic milking habits and improving storage facilities and transportation methods. Complementing his efforts are volunteers Don Nolan and Lee Albrecht, whose assignments have sought to improve water quality and locate water sources. Because milk is approximately 90% water, the water being consumed by dairy cattle must be of high quality in order to produce high quality milk.**

Increasing Livestock Health. Recent *Farmer to Farmer* efforts in Nicaragua have also focused on intensive rotational grazing, silage preservation and improving overall heard health. Technical assistance related to intensive rotational grazing – a practice in which one section of pasture is grazed while the remainder of the pasture rests – and electric fence construction has been provided to Nicaraguan dairy farmers by six *Farmer to Farmer* volunteers since 1996. These practices are beneficial for dairy cattle in particular, as rotational grazing allows forage to renew energy reserves, re-build plant vigor and provide long-term maximum pasture production, therefore improving the quality of grass consumed by herds. Other volunteers have focused on training dairy farmers to identify and resolve dairy cattle health problems such as Mastitis, an infection of the mammary gland that reduces milk quality.

Partners of the Americas
1424 K Street, NW · Suite 700 · Washington, DC 20005
202-628-3300 · Fax: 202-628-3306 · www.partners.net

Strengthening Organizational Capacity. Partners places great emphasis on the organizational strengthening of cooperatives, associations and organizations involved with the Nicaragua Dairy Project. The *Farmer to Farmer* program started targeting Nicaragua's producer groups, cattleman associations and cooperatives in 1999 when CONAGAN approached Partners, requesting help to improve their organizational structure and member services. Since that time, the organizational strengthening component of the project has aimed to expand the managerial and business capacity of the member organizations of CONAGAN. Wisconsin volunteers with expertise in community and institutional development have trained representatives from the governing boards of the livestock associations and cooperatives in techniques for problem identification and resolution. Also included is training in the formulation and negotiation of livestock projects and commercialization of products which directly improve the quality of life of its members. Since 1998, Partners has organized 15 *Farmer to Farmer* assignments that provided training focused on cooperative- and association-building.

Collaborator Highlight: CONAGAN

During their time in power, the Sandinista government nationalized many properties of regional cattleman associations, and the associations themselves were dissolved. After the country's civil war, many properties originally owned by these associations were sold, and the proceeds provided seed money for CONAGAN, which was officially formed as a legal entity in November 1993. CONAGAN was established with the specific purpose of bringing various organizations together to promote and develop the Nicaraguan cattle industry. In association with the Ministry of Agriculture, CONAGAN designed a national strategy for the development of livestock farming in 1996. Among the goals of this initiative are to expand livestock farming; produce semen and stud bulls; increase milk storage capacity; strengthen the semi-industrial cheese industry for exports; and unify the professional meat

Project Activities and Impact

Improving Milk Quality

Milk cooling systems play a crucial role in ensuring milk quality. Milk leaves the cow's udder at a temperature of approximately 100 degrees Fahrenheit and must be cooled to 39 degrees to slow bacterial growth within one-and-a-half hours after starting to milk. This means that if a farmer needs one hour to milk, he then has one-half-hour timeframe to transport the milk to a cooling station. Once the milk has been cooled, the temperature must be closely monitored to make sure it is held constant, which ensures that the bacteria found in milk stay dormant. A popular solution to this problem is to install collection stations – located relatively close to the dairy farms – with bulk tanks to cool the milk before being transported to a processing plant.

However, when *Farmer to Farmer* volunteer Robert Albrecht first traveled to Nicaragua in November 1999, he noticed how this widespread practice of installing collection stations was not well-suited to Nicaragua's dairy industry. During this assignment, Mr.

Albrecht noted the following problems with using a central milk collection system in Nicaragua's rural communities:

1. The high cost of bulk tank installation makes it prohibitive to establish enough of these collection points to significantly reduce the time from milking to cooling. This expense derives from the need to install large generator systems (due to the unreliable electricity in rural areas) and construct buildings to house these installations.
2. Cost of training personnel is high, as the bulk cooling and collection station requires trained personnel to sample, test, weigh and record each delivery of milk.
3. Because warm milk is added to cold milk at bulk collection sites, additional technology (such as an "ice bank" and plate coolers) is needed to cool the newly-added, warm milk at a faster rate.
4. This type of collection system entails high transportation costs, as bulk milk trucks are expensive to purchase (approximately $60,000 each). Small, local plants cannot afford these vehicles, most of which are not useful for other means of transportation.

As a result of these factors, Albrecht determined that the installation of a bulk milk cooling system is a reasonable solution only for larger, centrally-located dairy plants that can incur these added expenses and recruit trained personnel. In trying to adopt this system, most small-scale dairy farmers were forced to travel three to four hours one-way to the closest dairy processor and had no means of cooling their milk during this time. Furthermore, the farmers typically transported their milk in un-covered trucks and tanks, which increased the presence of sediment in the milk – Mr. Albrecht noted that as much as 20% of the sediment in milk came from road dust during transport.

To combat these problems, Albrecht introduced a new approach that he adapted from an older U.S. system of cooling milk prior to transport – in the farmer's own milk cans. As a result of this "new" technology, Mr. Albrecht has played a key role in changing inadequate milk storage and cooling practices in the Nicaraguan community of Comoapa. On his March 2000 trip, Mr. Albrecht suggested that dairy farm groups in this region construct can milk coolers (rather than the more expensive bulk milk coolers) at several sites accessible to multiple small-scale milk producers. The system requires relatively low-cost inputs – including diesel fuel, a compressor, pump and cooling coils – for each cooling unit. The farmers themselves furnish the labor and materials needed to construct the apparatus. With each unit being shared by six farmers, the cost per farmer is no more than $250 each.

Albrecht's suggestion introduced significant benefits to how Nicaragua's small-scale farmers approach milk cooling procedures. To function successfully, the collection points are established in areas serving six farmers and are located within a 30 minute drive of each farm involved. The central idea guiding the project is that milk remains in the farmers' individual containers, which means that already cooled milk is never mixed with warm milk. The cans are then stored at the collection site in pre-cooled water, which quickly cools the milk to the desired temperature with the aid of a small circulating pump. In terms of transportation, the small, local dairy plants can use flatbed trucks to collect the milk every other day, and the vehicles serve a dual purpose by also transporting finished products – cheese, butter and yogurt, for example – to markets. Moreover, this technique greatly reduces installation costs. The system requires a roof to protect the tanks from sun exposure and rain damage; a substantial cover to protect the diesel supply, compressor and pump; and a padlock on the tank cover for security reasons, with a key for each farmer using the unit. To date, the first can cooling unit has been installed near Camoapa to serve local farmers. Mr. Albrecht's long-term plan includes constructing 11 additional cooling centers. The San Francisco Cooperative, which purchases the majority of milk in this region, has started a policy of price differentiation for quality and grade of milk. As a result, additional rural cooling centers will continue helping farmers capture higher milk prices, since the establishment of additional cooling stations will result in higher overall milk quality.

In addition to introducing this milk cooling system at the producer level, Mr. Albrecht was also key in arranging for the installation of a bulk milk tank at the Universidad Nacional Agraria (UNA) Dairy Faculty, which was donated by Wisconsin Chapter member Meta Krueger. Before the installation, Mr. Albrecht investigated suitable sites for installing the bulk tank that met several criteria, including road and quality water accessibility and sufficient land accessibility. The bulk tank was installed in 2002 on the dairy farm of the UNA (National Agrarian University), which educates future dairy producers and others working in the dairy industry. The installation of this equipment has enabled UNA students to gain "hands-on" experience with modern milking and milk handling systems.

In conjunction with assignments by *Farmer to Farmer* volunteers Lee Albrecht and Don Nolan, Mr. Albrecht also focused his volunteer efforts on improving access to quality water. Quality water needs to be available for dairy herd consumption and for properly cleaning milking equipment. To provide access to quality water, Mr. Albrecht designed a water pump to be used in low-income, rural areas that replaces the common uncovered, hand-dug wells. The well connected to the pump uses a cement or wood top to protect

the water from direct contamination. The pump mechanism relies on a steel rod to pump water from 12-14 meters deep. Materials required to construct the pump and well-head are inexpensive and available in most areas of Nicaragua – poly vinyl chloride (PVC) pipe; pieces of auto tires and inner tubes; nuts, bolts and washers. Material costs do not exceed US$25, and assembly times takes less than four hours. Three water pumps are now installed, 20 potential well sites are identified, and 30 wells are tested and treated for the presence of *Enterobacteriaceae* (*E.coli*).

Increasing Livestock Health

In addition to ensuring milk quality, the improvement of storage and foraging practices are also key components of Partners' Nicaragua Dairy Project. This is a critical area of focus, as Nicaragua's dairy industry continually confronts problems associated with pronounced seasonal production variations. These "swings" in production are the product of a pasture-based dairy system, and inconsistent milk production levels result in considerable price differentials between the rainy and dry seasons. For example, Nicaragua's milk production during the rainy season (June - September) can increase by as much as 60% compared to milk production during the dry season (December - May). To combat this problem, *Farmer to Farmer* volunteers have been teaching a relatively new and innovative concept in dairy farming – intensive rotational grazing – to small-scale dairy producers in Nicaragua. On conventional Nicaraguan and U.S. dairy farms, farmers produce forage for their cows. But with intensive rotational grazing, cattle are rotated between relatively small paddocks, naturally controlling weeds and fertilizing with manure. Rotational grazing provides a range of advantages, including the following:

- More stable production during poor growing conditions, such as droughts;
- Greater yield potential;
- Higher quality forage available;
- Decreased weed and erosion problems; and
- More uniform soil fertility levels

Most importantly, intensive rotational grazing prolongs the length of time producers can pasture their cattle, therefore prolonging the season of greater milk production. Six volunteers have provided training focused on rotational grazing and electric fence construction to PRODEGA (*Proyecto de Desarrollo Rural Ganadero* - Rural Livestock Development Project - a Finnish foreign aid dairy project working in central Nicaragua), UNA students, and dairy cooperative members in the Nicaraguan communities of Juigalpa, Boaco and Camoapa.

As a part of these efforts, *Farmer to Farmer* volunteers Mark Kopecky and Joseph Tomandl traveled to Nicaragua in March 2001 to introduce training related to the principals and practices associated with rotational grazing methods. While in Nicaragua, Kopecky and Tomandl noticed that dairy farmers typically move cattle to distant farms and higher elevations during the summer, which is detrimental to milk production, cattle health and profitability. To correct this practice, the volunteers showed dairy farmers how a well-managed grazing system operates and explained the benefits of using this

type of system. The advantages include high forage quality, increased forage yields, longer grazing season duration and, as a result, improved animal health and milk quality. These concepts were relatively new to many farmers, but follow-up *Farmer to Farmer* assignments show that these practices have already been put into practice on a number of farms in the Boaco, Camoapa and Juigalpa regions of Nicaragua.

Following the advice of *Farmer to Farmer* volunteers, a farmer in the Boaco region set up a rotational grazing plan for his farm and purchased, at cost, electric fencing that was brought from Wisconsin. Within four months, he reported significant livestock and farm management improvements. Daily milk production on his farm has increased from 6.7 to 10 liters/cow, and the rotational grazing system allows him to manage his cattle in 15 *manzanas*, instead of the 200 he used previously, freeing up the remaining land for planting avocado trees and other produce.

In the area of Esteli, *Farmer to Farmer* volunteer Richard Toebe noted in January 2003 that the concept of intensive rotational grazing is still not well-understood and has not been put into practice enough successfully in this region. Working with the Catholic College of Agriculture and Cattle and the Association of Cattle Producers of Esteli, Toebe provided recommendations and introduced a preliminary plan for these institutions to adopt intensive rotational grazing on 45 acres. The strategy established by Toebe incorporated in-depth training of pasture management, an annual feed management plan based on pasture, forage crop production, stored feed and locally available concentrates. These recommendations were made to eight member farms, and five intensive rotational grazing plans were developed and implemented. Three workshops were also organized so other local farmers could gain knowledge and skills related to rotational grazing while learning how to transfer this information to other Esteli farmers.

Strengthening Organizational Capacity

A large part of Partners' efforts focus on "training trainers" and strengthening the ability of organizations/associations to meet the needs of their membership. To this end, volunteers with expertise in community development have trained representatives from the governing boards of Nicaragua-based livestock associations and cooperatives in techniques for problem identification and resolution. The majority of Partners volunteers providing this organizational strengthening assistance have worked with the UNA and CONAGAN to evaluate and make improvements in curriculum development; strategic planning, institutional and leadership development; extension program expansion; and

communications and public outreach efforts. In an effort to achieve these objectives, 15 *Farmer to Farmer* assignments have been completed in Nicaragua since 1998 to provide assistance in these areas.

For the past six years, *Farmer to Farmer* volunteer Robert Burke has been instrumental in guiding community and organizational development projects in Nicaragua. His completion of five *Farmer to Farmer* assignments in Nicaragua has lent consistency to the project, and the follow-up assistance he provides to his contacts at CONAGAN allows for project sustainability. Mr. Burke, a community development educator at the University of Wisconsin (Cooperative Extension), has focused on strengthening the management capacities of CONAGAN and has worked primarily with the organization's board and staff to improve current practices and establish long-term goals. When he first traveled to Nicaragua through *Farmer to Farmer* in November 1999, Mr. Burke observed that dairy producers could not access information and training that would improve their own dairy production practices. He also noticed that with the reduction of state involvement in training initiatives, a greater role existed for CONAGAN to provide training to those involved in Nicaragua's livestock industry. In an effort to improve these services, Mr. Burke has helped CONAGAN combat several difficulties facing their Programa de Extensión Ganadero (Livestock Extension Program), including program expansion to other municipalities; incorporation of new technology and training methodologies; and technical skill improvement of CONAGAN trainers.

Working under the tutelage of Mr. Burke and other Wisconsin volunteers, CONAGAN extension agents have designed strategies to increase dairy production and help cattle ranchers begin focusing resources and priorities to meet existing problems. Since 1998, *Farmer to Farmer* volunteers have organized nine capacity-building workshops for CONAGAN trainers to analyze their current efforts and make improvements in service delivery. Together they identified problem areas – access to financial loans with low interest rates, poor overall farming infrastructure, technical assistance available for producers, ability to confront water and feeding problems, trucks available to transport milk – and discussed options for collectively resolving these problems. Mr. Burke has also offered training related to technology transfer and community development, both key principals of cooperative extension work and, to date, 104 people have been trained in these techniques.

In addition to working with CONAGAN, *Farmer to Farmer* volunteers through Partners have also provided assistance to PRODEGA, which was started 10 years ago in the Chontales Department of Nicaragua in an effort to form dairy cooperatives and undertake projects focused on improving milk production and marketing for small- to medium-sized farms. Two years ago, PRODEGA formed an alliance of five dairy cooperatives that together comprise more than 300 members and are funded by the governments of Finland (80%) and Nicaragua (20%). PRODEGA requested help in improving communications among members and better meeting the training needs of dairy cooperatives. In response, Partners fielded two *Farmer to Farmer* volunteers –

Mary Bell and Mary Crave, both from the University of Wisconsin (Cooperative Extension) – to provide assistance in January 2002.

Working with 30 members and directors of PRODEGA, the volunteers helped the cooperative identify the most effective methods of disseminating information and educating its cooperative members, including the creation of a newsletter and establishment of a resource library. The volunteers also organized focus groups of cooperative members to determine how PRODEGA can best meet the needs of its members. PRODEGA used the focus group's feedback to create a list detailing the advantages of cooperative membership – including higher milk prices, access to milk collection points, monthly training from technical experts and veterinary services. They have used this information to encourage others to join the cooperative, and membership has increased by 33% since 2001 as a result of this assistance.

Conclusion

Although *Farmer to Farmer* volunteers have made significant progress in strengthening the Nicaragua Dairy Project, challenges still remain. One of the greatest difficulties confronting dairy producers is access to milk cooling units, and Mr. Albrecht plans to continue working with these small- and medium-scale farmers to meet these challenges. Because he successfully established his innovative milk can cooling unit in Comoapa, Mr. Albrecht now plans to continue these efforts by establishing at least 11 additional units in this region of Nicaragua. Moreover, *Farmer to Farmer* volunteer assistance related to institutional development will certainly allow cooperative and association members to continue expanding their networking capabilities, internal communication and member services. The "training of trainers" model that Partners has established by educating local farmers in grazing and foraging techniques, not to mention technical expertise in well/water pump construction and cooperative strengthening, will allow those who have benefited from *Farmer to Farmer* technical assistance to train other community leaders. The majority of *Farmer to Farmer* volunteers maintain contact with those people they worked with while in-country and provide continued assistance via e-mail and phone correspondence as future challenges emerge.

Farmer to Farmer volunteers are also seeking federal and private funding to support the project. So far, two volunteers have been successful in securing additional support. Last spring, the University of Wisconsin River Falls (UWRF) was awarded a USAID/Global grant for $103,000 that currently funds an agricultural exchange program between the University's College of Agriculture, Food and Environmental Sciences and the UNA in Managua. Through the program, UNA faculty members travel to UWRF to receive training on topics including animal nutrition, rotational grazing and farm financial management – skills that are then transferred to the Nicaragua Dairy Project. One faculty member has completed this training in 2003, and six more are scheduled to travel in the coming year. The funding also allows for north to south travel, and two UWRF

professors traveled to Nicaragua in 2003. Four additional trips are scheduled for 2004. The Wisconsin Chapter of Partners of the Americas and the University of Wisconsin Cooperative Extension, both key collaborators in this project, continue seeking external funding options that will allow volunteers to continue providing needed follow-up services.